

COMPUTERWORLD

Users warm to license outsourcing

Resellers fill gap with new programs

By William Brandel

Wayne Pattison is a happy man. While many of his peers struggle to manage compliance with the many software licensing schemes on the market, he has few worries.

That is because Pattison, the director of data center operations at the Kansas City Southern Railway Co., has unloaded the monitoring, reporting and maintenance of the railroad's software licenses to a third-party reseller.

"We've done it for six months, and it has been very successful," Pattison said. "I don't really know if it has saved us money, but I do know that it is very convenient. And that's what this is all about: convenience."

Strange bedfellows

By outsourcing license management, curtailing to resellers and other third parties, users and vendors are finally finding common ground on an issue that usually has them at loggerheads. This is **License management, page 16**



Once you acquire the technical skills to develop object-oriented programs, you have to master the mind-set needed to help you make the most of this emerging technology. Here's a 12-step survival guide. **(IN DEPTH, PAGE 38)**

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Few mourn DOS decline

Upgrades made moot by newer systems, customers say

By Stuart J. Johnston

The apparent impending demise of MS-DOS may just trigger a New Orleans-style send-off, with users dancing all the way to the graveyard.

In recent interviews, Microsoft Corp. executives said they doubt there will be much demand for any further updates of DOS once Chicago, which will not require DOS, ships next year. Chicago is the next release of Windows.

At least one other purveyor of DOS—Novell, Inc.—may have seen the writing on the wall. The company is widely rumored to be nearing a decision to cut its losses and phase out Novell DOS. However, a spokeswoman for the Provo, Utah-based firm refused to confirm or deny the reports.

And despite statements by IBM officials that this will leave them an opening in the operating

Sales of DOS applications in the first quarter of 1994 plunged 34% from a year earlier to \$935 million, according to a report issued by the Software Publishers Association. At the same time, sales of Windows applications jumped 43% to \$499 million.

systems arena, via the company's PC DOS offering, an informal survey of both large and small users shows that Microsoft may be right.

For example, even though nearly a third of Stone Container Corp.'s 3,000-plus PCs still run only DOS, "I'm not sure I'd be complaining" if Microsoft does not release further upgrades, said Ki Wilson, a senior microcomputer analyst at the Chicago firm. The [current DOS] 6.2 feature set is pretty compelling," he added.

Windows dominates

"I don't think that would be a real large issue for us. We've implemented standards that the base desktop machines will all have Windows," said Michael Schaeffer, LAN support team leader for Amoco's Chicago campus.

"I don't think we care about MS-DOS 7.0 [be-
DOS, page 117]

Powersoft catches user flak

By Melinda-Carol Ballou

Powersoft Corp. would do well to stabilize the current version of its PowerBuilder 3.0 client/server development tools before louting the capabilities of its upcoming Release 4.0, according to a number of frustrated developers on CompuServe's Powersoft Forum last week.

While many users cited productivity gains in creating applications with PowerBuilder, at least 50 users voiced complaints on CompuServe over the past month about the instability of the tool in a variety of situations.

In CompuServe discussions dealing with general protection faults, developers described system crashes occurring, for instance, with Powersoft's debugger, screen and database painters and in conjunction with certain video monitors.

"I've been doing extensive, intensive PowerBuilder development for over a year.... PowerBuilder has a dual personality: Good PB and Evil PB."

—CompuServe user on PowerBuilder bugs

"I'd like them to fix the bugs in 3.0 before they come out with a new version," said Joe Pearson, an analyst at JDP Computer Services in Boise, Idaho, who provides consulting services for several banks and the state of Idaho.

"It's ridiculous. We've got a mission-critical application which
Powersoft, page 117]

Software kingpins

Novell head offers truce to Microsoft

By Elisabeth Horvitz

Robert Frankenberg's first official act as Novell, Inc. chairman last week was a momentous one. He established détente with the network operating system giant's longtime rival, Microsoft Corp.

At a meeting with Gartner Group, Inc. analysts last week, Frankenberg said he had met with Microsoft Chairman Bill Gates the previous week. "The Microsoft bashing and bad relationships will go away," reported David Ceppuccio, an analyst at the Stamford, Conn. research firm.

Higher profile

Ending the silence he has maintained since his appointment as Ray Noorda's successor last March, Frankenberg also briefed some analysts on several announcements slated for the New World Interop show early next month.

Among the key product introductions will be Mosaic front ends that will enable NetWare clients and servers to interact on the Internet World-Wide Web. Also in the
Novell, page 10

Big Oil overhauls IS role

By Julie King and Joan B. Sherman

Fueled in part by more-efficient information systems, attendees at major oil companies are re-evaluating through the smoke of 70 departments. This result is a retooling as well as a downsizing of the IS role.

Several of the top executives from around 16,000 jobs in recent weeks as part of an unimpeachable drive to eliminate costs and boost profits. And as more sophisticated personnel management systems and only one... executives for industry data, 20 is increasingly being viewed as a target of the cost centers.

However, implementations of spin systems—with their use of people and software.



Units, servers, relational databases and PC clients... are proving far less costly than labor-intensive mainframe data centers. IS executives said.

The magnitude of change in the oil industry, where the revenue of large firms ranges between \$1 billion and \$100 billion, is staggering. The shift is also emblematic of trends sweeping the industry, said William E. Davis, president and chief executive officer of the Petroleum Industry Open Software Group, a former-Chessman Corp. executive.

"The biggest change you've seen in the oil business today is that those huge IS staffs that used to build [application] systems are being eliminated," Davis said.

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SEE MANAGEMENT
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NEWS

- As Powersoft officials press forward with a new version of their development tool, scheduled for unveiling this week, some developers say they are still having problems with the current release. *Page 1*
- Desktop vendors keep announcing price cuts, but users want to know just how deep the cuts will go. *Page 4*
- Users grapple with the issue of how best to connect their Novell NetWare and Unix servers. *Page 6*
- Lotus plans to integrate Notes with the Internet, a move that appears to be at the tip of an industry iceberg. *Page 6*
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- IBM plans a faster version of CICS/0000 that analysts say should finally make it competitive with rival Unix transaction processing products. *Page 12*
- Users and vendors plan to share information about security threats and solutions. *Page 14*
- Cisco tightens ties with Chipcom and Cabletron through technology-sharing agreements. *Page 16*
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- Thinking Machines has filed for Chapter 11, but analysts and users remain hot on parallel processing's promise. *Page 30*

DESKTOP COMPUTING

- The Borland Database Engine provides a common engine for developers across Borland's product line. *Page 39*

WORKGROUP COMPUTING

- While network managers often overlook them, network modeling tools can make network design more of a science than a black art. *Page 45*

ENTERPRISE NETWORKING

- Banyan's upcoming product enhancements may be too late to retain some corporate customers. *Page 57*

LARGE SYSTEMS

- Closer Look: Client/server computing makes application integration possible, but there's nothing easy about it. *Page 63*

APPLICATION DEVELOPMENT

- Corporate IS developers are about to step into a storm of object-oriented activity. *Page 71*

IN DEPTH

- So you have mastered C++ and Smalltalk. But to make your object-oriented development effort work, you need a far-ranging vision, sharp focus and this 12-step survival guide. *Page 89*

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- No two approaches are the same when supporting a mixed environment. However, one thing is clear: Support staffs are creatively doing more with less. *Page 96*

MARKETPLACE

- Individual chargeback products are not comprehensive enough for distributed environments. *Page 106*

COMMENTARY

- Paul Gilkin warns that Apple must focus on core markets and technologies. *Page 34*
- Philippe Amouyal says Microsoft succeeds by doing things right, not through predatory practices. *Page 38*
- Paul Strussmann says that information architectures are useless if they don't take into account the corporate power structure. *Page 38*

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Executive Briefing

It may not have the impact of the Nixon/Soviet detente efforts, but Novell and Microsoft took a step toward world peace in the computer industry when new Novell Chairman Robert Frankenberg and Microsoft Chairman Bill Gates sat down for what has been described as an amiable talk. *Page 1*

Fueled in part by more efficient information systems, cutbacks at the major oil companies have been ongoing for the past several years. But now IS is becoming a target, as more petroleum companies embrace packaged software applications and rely on outside providers for industry data. *Page 1*

There are staff cuts elsewhere as well. Sources say Scott Paper is paving the way to outsource its IS organization by cutting jobs and placing the remaining staffers in a holding pattern. Meanwhile, Bell Atlantic is tracing for beefed-up competition by cutting costs and personnel and developing open information systems. *Page 8*

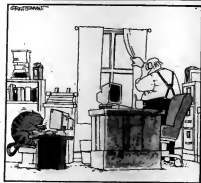
What does the future hold for IS? Prepare for a client/server world where hardware, applications and skills are disposable, users do much of their own programming and charge-backs are a thing of the past, or you may end up a disposable person. That's the advice of PNC Mortgage's outspoken IS chief, Lellani Allen. *Page 84*

Plans to open Denver International Airport—which will replace Stapleton Airport—are still on hold, as the city struggles to get a computerized baggage system on-line. The airport, which was set to open on March 15, may not open now until Dec. 31. *Page 28*

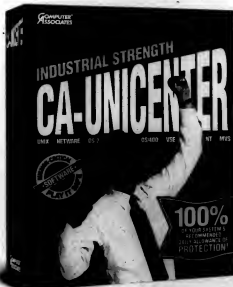
Managers of multinational networks want products—and product support services—that help extend their networks to countries whose information highways are less sophisticated than those in the U.S. But sometimes what they get is a product tailored for the U.S. networking environment that is supported poorly—if at all—in other regions of the world. *Page 57*

Future network and systems management applications will pore over data sent across networks and peek into desktop computers, sometimes with the help of products that take control of processes on LAN-attached PCs without users' knowledge. As a result, network and IS managers are beginning to rethink their privacy and security policies. *Page 14*

The 5th Wave by Rich Tennant

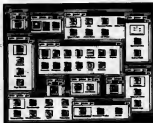


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Virus infection spurs Internet debate

By Gary H. Anthes

■ *Quick time. Internet service providers that allow computer viruses to be distributed over their networks are: a) criminals; b) negligent but not criminals; c) innocent parties with no responsibility for what moves over their networks; d) defenders of free speech.*

No matter how you might answer the above, you would have found support last week in a growing debate over allegations that an Internet access provider knowingly allows computer viruses to be distributed over its network.

The vendor, Netcom On-Line Communications, Inc. in San Jose, Calif., said it was investigating a user alleged to be distributing viruses but so far had turned up no evidence of illegal or improper behavior.

"If we determine he is distributing a virus that would be disruptive, he's out of here in a heartbeat," said Netcom President John Whalen.

Breaking the 'netiquette'

Whalen said users engaging in illegal activity—or even significant breaches of "netiquette"—are given a one warning. If they repeat the offense, Netcom permanently bans them. Netcom recently notified a user of its network, access from an Arizona law firm that violated Internet rules by broadcasting advertisements for its legal services.

According to virus authority Fredrik Skulason, president of Frisk Software International in Reykjavik, Iceland, the offending account contains *4096*, *Crypt* and

Nuke *InfoJournal*, underground magazines that contain annotated virus source code and instructions for writing viruses.

One of the viruses available on a Netcom account, according to Skulason, is "KOIL," which encrypts files on the hard disk and then replicates them to diskettes. "The author claims it is completely harmless, but that is absolute bull—," he said. "It can cause serious compatibility problems under certain circumstances."

Skulason posted a complaint about Netcom several weeks ago to the Internet news group comp.security.misc. He later received a reply saying that while Netcom does not endorse the distribution of viruses, viruses are not illegal.

Denis David, vice president of operations at Netcom, said he knew of a Netcom customer who had the virus material available for file transfer. "Why he has it out there, I don't know," David said. "But companies that write antivirus code need to have virus samples available. How do you know whether your user is supplying virus code to legitimate accounts?"

Computer security experts said it is generally not possible to determine who is ultimately harmed by viruses downloaded from Internet bulletin boards because most viruses come from multiple sources and there is generally no audit trail showing who has downloaded an item.

It is difficult for access providers to keep harmful

things such as viruses off their networks, said Anthony M. Rutkowski, executive director at the Internet Society in Reston, Va. "But if a specific instance is brought to their attention, the operator has a responsibility to do something."

"I don't think they have a responsibility for searching through every file, but as soon as Netcom knows [viruses] exist, it would be their responsibility to get rid of it," said Peter S. Tippett, director of security and enterprise products at Symantec/Peter Norton Products Group.



Damned either way

But the issue is not that simple, said Mark Rasch, a computer crime specialist at the Washington law firm of Arent Fox Kintner Plotkin & Kahn. "Service providers are damned if they do and damned if they don't," he said.

According to Rasch, if providers attempt to regulate the Internet on their networks, they stand accused of violating First Amendment speech rights. If they keep hands off but know the harm may result from something on their networks, they could be sued as accomplices by the party harmed. "Or they'd rather get sued on First Amendment grounds," he said.

Whalen said the right to free speech cuts both ways. "We have a First Amendment right not to carry customers who violate rules, just as a newstand owner could refuse to carry pornography."

Desktop pricing plunge accelerates

By Jaikumar Vijayan

As desktop prices continue their seemingly crazy free fall, many customers are asking, "Just how much farther will they drop this year?"

"Definitely more," if current trends are any indication, according to Tom Kuahary, president of Summit Strategies in Boston. In fact, figures from market research firm Workload Technology Inc. in Hampton, N.H., show that on average, prices for typical 60-MHz Intel Corp. Pentium boxes, for instance, could drop by an estimated 15% between this year's second and third quarters. That being the case, some users said they will not off purchases.

Leaders set trends

As vendors prepare for the busy late third- and fourth-quarter season, users can expect to see further price cuts from second- and third-tier vendors. These expected cuts are provoked primarily by market leader Compaq Computer Corp.'s announcement last week that it is dropping prices again, analysts said.

Compaq rolled back prices on almost its entire product line by up to 22%. The Houston-based box maker's second major price reduction in less than three months could once again significantly lower the pricing bar, according to analysts.

After the most recent reductions, a high-end Compaq DeskPro XL that used to sell for \$3,299 will now sell for \$2,999, a value-priced ProLinea previously selling

for about \$2,299 now sells for \$1,949.

In response, analysts said, users can expect cuts from competitors that match or exceed those announced by Compaq.

The latest Compaq price cuts follow similar but smaller cuts from first-tier rivals IBM PC Co. and Dell Computer Corp. For instance, earlier this month, Dell

"What is probably going to happen is that the current \$1,500 to \$2,500 price points are going to get reestablished with a new feature list," McCarron said.

The recent price cuts are said to be fueled by falling processor prices—particularly Intel's Pentium push—and an increasing willingness by top-tier vendors to buy market share. In turn,

this activity is expected to result in lower prices as the Christmas season approaches, according to analysts.

Waiting for a big drop

Users are watching closely and there are indications that at least a few may be postponing purchase decisions and waiting for prices to fall even further.

"Our current strategy is to delay almost all our purchases till the best possible time," said John Williams, manager of MIS at Priority Pharmacy in San Diego.

"Vendors have been making some huge price reductions so we have decided to wait and see before buying."

Others may be thinking of doing the same. "With these periodic price cuts it's better to just hold on for some time to get a better deal," said Frank Chastain, a manager of information systems at Sprint Corp. in Overland Park, Kan.

Also key is the possibility that as more vendors start to offer price cuts, increased competition at the retail end and softer end of the channel could mean even lower street prices.

Desktop drops	
Average price for a system with a 66-MHz Pentium, 8M bytes of RAM and a 340M byte hard drive	
PRICE FOR 1994	PERCENT CHANGE
Q1	N/A
Q2	N/A
Q3 - \$2,698*	15%
*Projected	N/A - Not available

Source: Workload Technology, Inc., Hampton, N.H.

dropped prices on some server products by up to 23% and recently introduced very aggressively priced Pentium products. This month, Dell started shipping a new 90-MHz Pentium system for \$2,799.

Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz., predicted that as more vendors respond to pricing actions by the top vendors, some systems, such as those based on high-end Pentium 60- and 66-MHz processors, could start becoming widely available for less than \$2,000.

However, not many think a real price war will erupt.

"Think of inventory levels remain high, then pricing could drop," said Richard Zwetchevskan, an analyst at International Data Corp. in Framingham, Mass. He discounted the possibility of a price war though and said prices are dropping because of rapid product transitions.

"I don't see it in Compaq's or anybody's interest to generate a price war. They want to keep products moving and manage life cycle transition. Today's product that isn't moving in tomorrow's landfill," Zwetchevskan said.

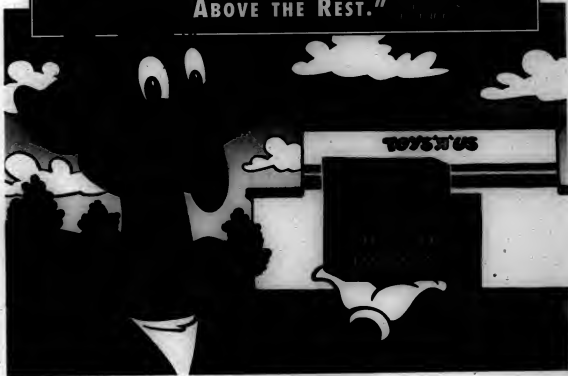
Corrections

Made no mistake about it—Digital Equipment Corp.'s Alpha AXP systems, indeed, a 64-bit system. Due to an error, it was described twice as a 32-bit system [CW, July 18 and Aug. 15]. In fact, Digital made the transition from 32 to 64 bits ahead of Hewlett-Packard Co. IBM and Sun Microsystems, Inc., its chief competitors, and富士 64-bit Unix variant as well.

Due to a reporting error, "Software agents target 'cyberbulg'" [CW, Aug. 15] included a chart stating that a Deep Woods Technology client firm had 450 employees. The company has 164,000 employees but only 400 were included in the survey detailed in the chart.

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ORACLE

Users still struggle to link NetWare, Unix

By Jean S. Rosman

As Unix servers become more widely used as database servers and hosts of corporate applications, they are increasingly colliding with the Novell, Inc. NetWare LANs that dominate PC users' workgroups.

Information systems managers said last week they are wrestling with finding the best way to hook NetWare and Unix systems together. But the problem remains that Unix and NetWare have two different ways of handling files, directories and print services.

"It doesn't take a rocket scientist to see that there is a big hole in integrating Unix and NetWare," said David M. Smith, director of advanced operating environments research at International Data Corp. in Framingham, Mass. Yet so far, he said, Novell has failed to edge out Unix players in providing NetWare/Unix links, even though Novell bought Unix System Laboratories, Inc. and its Unix source code last year.

A Computerworld survey of 60 IS shops last week

showed that 78% of them already interconnect their PC LANs and Unix networks.

There is no lack of products to tie NetWare and Unix together, users and industry analysts said. Novell, along with third-party software firms and Unix systems vendors, has a number of TCP/IP Network File System and NFS/SX protocol packages that create connectivity.



In the works

While independent software firms and Unix system vendors offer their solutions to the problem, Novell is expected to throw its hat in the ring with an enhanced NetWare/Unix integration package when UnixWare 2.0 ships later this year.

Keith Brown, director of technical marketing at Novell's Unix Systems Group, said last week that Novell plans to enhance its UnixWare 2.0 Unix operating systems this fall to include greater connectivity between NetWare and a wide variety of Unix systems from other vendors.

Some users at Unix-centric sites, including New Orleans utility firm Entergy Corp. and the American Baruck Goldstrike, Inc. in Elko, Nev., are so frustrated with duplicated directories and features that

they are removing NetWare LANs.

"Our whole point in doing this was that we would get to one common network," said Dan Sullivan, a hardware technician at the Barrick mine who manages PC/Unix integration. "The critical item there was maintaining three separate networks," including two NetWare networks that once had 120 of the site's 500 PCs. Using both NetWare and Unix servers, however, is more widespread. "The problem is there's a sort of emotional reconciliation here," said Tony Carristo, a consultant at Mile-High Information Services in Denver. "How do I persuade myself it's OK to run NetWare and realize

NetWare is wonderful for file and print services but [that it] doesn't make much of an [enterprise] application server? Some server roles are standardizing on NetWare LANs for workgroups but are adding connectivity to a new generation of Unix enterprise servers. "Our PCs are on Novell for the most part, but we are all migrating to Unix," servers, said Joey Cartwright, a technical adviser at PepsiCo at Exton, Pa. in Memphis.

Cartwright said about 300 corporate application developers on NetWare LANs need to access the Unix servers that run Pex's corporate applications. His group is evaluating a number of TCP/IP packages for PCs, including LAN WorkPlace from Novell, to create the links.

McGill University in Montreal has more than 500 Unix workstations and servers on campus and about 4,000 PCs, many of them on NetWare LANs.

"It all comes down to what you want to do and where does your application reside," said Lisa Laing, a network systems analyst at McGill's computing center. "That determines which servers hold the applications."

Users consider dumping Banyan's Vines. See page 57.

Internet integration plans ramping up

By Linda Rudenshich

Firms looking at the vast, uncharted territory of the Internet for new ways to disseminate information should receive a helping hand from familiar vendors by early next year.

Lotus Development Corp. said it plans to integrate Notes with the Internet, a move that appears to be at the tip of a large industry iceberg. Oracle Corp., WordPerfect Corp. and SunSoft, Inc. also acknowledged they are working on software that will integrate their products with the World-Wide Web, a standard client/server by-product system that runs over the Internet.

A Web server lets firms publish information with live links to data on other servers. It can be accessed using Internet browsers such as Mosaic. In short, it can function as public groupware. Yet creating a Web server is more complex than creating simple Internet messaging or news-feed connections.

The promised integration, however, will ease the creation of Web servers. It does this primarily by setting up two-way links between popular commercial applications such as Notes and HyperText Markup Language (HTML), the Web's document format. The links will enable users to quickly develop information applications using commercial software

and make the information available to Internet users who have Web browsers.

"There's a whole growth of activity on the Internet and on Notes. This ties the biggest groupware platforms [Notes and

ers is not easy because the software is public domain software and lacks support (see chart). That is where the commercial software can step in, users said.

Lotus officials confirmed last week that the company plans to enable Web browsers to access information in a Notes database and to enable Notes clients to access Web servers.

An Internet-equipped version of Notes could be a lower-cost, lower-support version of the AT&T Network Notes service that AT&T Corp. and Lotus announced for early 1995. Lotus plans a low-cost Notes client aimed in part at preventing users from turning to commercial versions of Mosaic clients (see below).

For developer capabilities this year, Lotus will probably partner with

companies that already have developed HTML-to-Notes code, analysts said.

Corporate Software, Inc. is a likely candidate. AI GroupWare '94 in San Jose, Calif., the company demonstrated WebLink, a bidirectional gateway that lets developers create Notes databases and convert them to Web servers.

Other vendors also have big plans for Internet integration. Oracle said it will unveil a corporate enterprise version of its Oracle Model Server at its Sept. 23 user conference in San Francisco. The Model Server, based on Oracle7, will include the bidirectional software needed to create Web servers using Oracle, said Ray Bell, a director of product integration.

WordPerfect expects to have HTML authoring software by next year, said a source close to the firm. And SunSoft will soon have a Web security software that helps users commercialize the Web.



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4. **Stronger security** such as encryption capability
5. **Less complicated** authoring tools for creating web servers
6. **Support for an interactive** Web is used mainly for browsing now

Source: Corporate Software, Inc., Arlington, Va.

the Web into one," said Arnet Patel, manager of advanced technologies at RASF Corp., an international conglomerate with U.S. headquarters in Parsippany, N.J. This is what makes it so interesting to corporate users such as himself, he added.

Although user companies want to use the Web to reach the Internet's widely expanding user base, authoring Web servers

Notes on the cheap

Lotus plans to announce a cheaper version of Notes that will likely provide Notes abstract mail and access to Notes databases next month and deliver it shortly thereafter, according to sources close to the company. However, they said the product, Notes Express, will not offer the full suite of development capabilities.

Notes cost \$400 per user and sells commercially for as low as \$300. Notes Express will cost roughly \$100, the sources said. Analysts and users said

lower-cost clients are easy to create by creating Notes abstracts as Notes files and on the Internet.

Lotus already said it will develop a Notes "lite" client to use with AT&T Network Notes, but the sources said this is a separate development that Lotus will market. But it is unclear how Notes Express will differ from a recent, heavy version of C-C-Blast that Lotus will have Notes database access said will have Notes database access.

—Linda Rudenshich

Industry group assails IBM bid to end decree

Association goes to court to maintain status quo

By Mark Halper

Concerned that IBM's efforts to terminate a 38-year-old antitrust decree could damage competing hardware and software vendors, an association representing a broad swath of the computer and communications industry is opposing the recovering giant's latest attempts to set aside the ruling.

The Computer & Communications Industry Association (CCIA) plans to file a motion today in U.S. District Court for the Southern District of New York requesting permission to intervene in the case, according to a memorandum the group filed with the court late last month.

IBM asked the same court in June to terminate the 1966 Consent Decree, which among other restrictions prevents IBM from providing special hardware and software pricing to its own manufacturing subsidiary, Integrated Systems Solutions Corp. [CW, June 13].

For users, the case raises the question of whether a successful IBM effort would

"we believe will be useful in assisting us and others in our industry in working with IBM."

Poppa said he fully supports the spirit, if not the letter, of the consent decree, which he described as promoting competition. IBM's storage division has been

uncooperative in providing software interfaces to StorageTek, and abolishing the consent decree would encourage more of that type of behavior, Poppa claimed.

Doo Pwiler, senior vice president at Tandem, said the CCIA acted independently of Tandem but that the company is looking into the possible ramifications

for its business if the consent decree is terminated. The company should complete an evaluation in two to three weeks, he said.

A Unisys spokesman declined to comment on the case, and the Hitachi executive monitoring the consent decree issue was on vacation and could not be reached.



StorageTek CEO Ryal Poppa: Decree promotes competition

by leveraging its market power to gain account-controlling service contracts. IBM has argued that the consent decree is an anachronism that applied before the company fell from its position as a dominant industry power.

"IBM has already stated its intention to exercise its monopoly power should the consent decree be terminated," the CCIA said in its memorandum. "With the consent decree terminated, IBM would want to cross-subsidize its service subsidiary by not having it compete fairly on the basis of its costs."

Keeping a close eye

The CCIA cited in its filing that its members include venerable IBM competitors such as Hitachi Data Systems Corp., Amdahl Corp., Unisys Corp., Storage Technology Corp. and Tandem Computers, Inc. However, the CCIA filing does not necessarily mean that each of those companies oppose the IBM initiative to remove the consent decree.

Still, the named companies are watching the matter closely.

"We were one of those that requested CCIA take an active role in this action," said Ryal Poppa, chief executive officer at StorageTek. "The consent decree places certain restrictions on IBM that

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IBM's new IAM (IBM Advanced Management) software significantly reduces night processing times by up to 80% on DASD (Direct Access Storage Device) and ESDS (Extended Sequential Data Storage) files. IAM is a new software product that automatically changes the number of buffers and I/O channels used by IBM's existing ESDS and DASD files to the optimal level.

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News Shorts

More OS/2 apps on the way

IBM said last week it will release the deal for OS/2 users by bundling more than 10 applications with the next version of the operating system, expected around October. Called *BoosterPak*, the bundle will include a suite of native 32-bit applications. Included will be a word processor, spreadsheet, database, graphics application, communications program and a personal information manager.

HP posts strong Q3 revenue

Building on its growing strength in Unix servers and PCs, Hewlett-Packard Co. reported a strong third quarter for its computer products. Sales of HP 9000 Model 800s — HP's largest Unix servers — accelerated, reaching 40% more revenue in this third fiscal quarter than for the same period in 1983, HP said. Steady growth in PCs and HP's printer business combined with Unix server sales to push quarterly revenue 22% higher than the same quarter last year. Quarterly revenue was \$6.1 billion, including \$4.6 billion related to computer sales, with profits of \$347 million.

AT&T GIS to port Unix to NT

Microsoft Corp. last week called AT&T Global Information Solutions in its battle to gain enterprise acceptance of Windows NT. The two companies agreed that AT&T GIS will port key Unix features to the 32-bit operating system. Drawing on software it offers in the Unix world, AT&T GIS will port its Top End transaction processing, Linkkeeper FDB clustering and Netball and CommVault network backup and restore programs to NT, the company said.

MCI announces SMDS pricing

MCI Communications Corp. became the first long-distance carrier to announce pricing for switched Multimegabit Data Service (SMDS) last week. Pricing for MCI's HyperStream SMDS service is composed of two parts: a monthly per/subscription charge based on access speed; and transport charges. MCI's pricing does not include the fees charged by a user's local exchange carrier for an SMDS access point.

Cray gets \$4.2 million in fed deal

Financially strapped Cray Computer Corp. signed a deal to get up to \$4.2 million from the National Security Agency (NSA) for use in developing a promised system combining its Cray-3 supercomputer with massively parallel processing chips engineered by the NSA (ENR, July 18). The NSA has not committed to purchasing the Cray-3/MPP hybrid, which will make its appearance during the second quarter of next year.

Compaq to put safety warning on PCs

Beginning in the fourth quarter of this year, Compaq Computer Corp. will start placing labels on its keyboards urging customers to read a safety booklet included with every Compaq computer. The booklet, an updated version of an existing one, will offer suggestions on furniture, posture and lighting.

SHORT TAKES The Student Loan Marketing Association (known as Sallie Mae) said Washington veteran Edith W. Martin will become its chief technology officer. ... Five Los Angeles gang members involved in a nationwide high-speed drug burglary scheme were sentenced to 24 to 37 months in prison last week in Charlotte, N.C., after they pleaded guilty to bank fraud. Prosecutors said the gang, which used inexpensive computer equipment to generate counterfeit checks, was involved in passing more than \$2 million in fake checks.

IS feels heat at paper giant...

By Julia King

Scott Paper Co. last week terminated about 25% of its information systems staff and placed another 70% of IS employees on hold until October, when the company is widely expected to outsource its entire IS operation.

"I'm going home now to bowl my eyes out," said a programmer anywhere else walked through the parking lot at the company's Phil-

a dramatic cutback in Scott's corporate headquarters staff, which the company said will decline from 1,100 workers to about 450. The company is also selling its 55-acre office campus as part of an overall restructuring that has been distinguished by its cost-cutting pyrotechnics (see timeline below).

In January, the company announced it would cut 5,300 jobs companywide in the next three years, a move expected to save

er this month, Dunlap widened the restructuring to include cutting 10,500 workers companywide by the end of this year.

Waiting game

Last week, Scott officials refused to comment specifically on the most recent round of IS cuts, but several staffers confirmed the layoffs and their "on hold" status.

"On Tuesday, we were each given a time for an appointment to learn our status," a staffer said. "The people who were let go also had appointments with an employment agency. They're finished today."

Another applications developer who was placed on hold said the cutbacks were not a total surprise to the IS staff. Many employees, including the developer, had been interviewing for new jobs over the past few months, he said.

IS staffers said the company also plans to cut about 30 outside consulting contractors. Additionally, they said plans call for outsourcing several other corporate functions, including payroll and compensation and benefits.



adelphia headquarters last Wednesday. "Today, I still have a job, but for how long I don't know. We're not looking for any rational decisions here."

Last week's IS cuts were part of

\$400 million. But in June, that plan was accelerated under orders from Scott's new chairman and chief executive officer, Albert J. Dunlap, who is called "Chainsaw" and "Rambo" by employees. Ear-

...and at telecom firm — again

By Julia King

Bell Atlantic Corp. Chief Information Officer Ralph Szegenda last week disclosed plans to radically overhaul the company's 3,000-person information systems organization.

Among other changes, it is closing five of seven data centers, cutting another 250 IS jobs in the next three months and developing several client/server systems designed to streamline service delivery.

Competitive pressures have already prompted an unprecedented increase in new systems development, which now accounts for about 60% of the total IS effort at the company. This compares with less than 30% a year ago.

"We have major systems development going on in customer service, billings and collections," Szegenda said in an interview last week. "What we're looking for is an overall reduction in our cost base."

By next year, Szegenda said, the company will have more than doubled and possibly tripled its installed base of distributed workstations, which already number

several thousand. Also, due largely to an increase in the use of computer-aided software engineering tools and object-oriented programming, development time has been compressed significantly.

"I have a major concept of chunking [under which] you have to deliver some portion of value-added information every six months," Szegenda said. "You can't wait six years like before."

Three months ago, Bell Atlantic cut about 290 IS jobs, according to IS sources. The most recent reductions and the data

center consolidations, which are expected to save hundreds of millions of dollars during the next decade, are the latest in a series of major organizational changes marking Szegenda's year-long tenure as CIO.

Shortly after joining the Philadelphia-based telecommunications company in June 1983, Szegenda decentralized its IS organization, bringing in veteran IS executives from MCI Communications Corp., American Airlines and Texas Instruments, Inc., among others, as CIOs at Bell Atlantic's six business units.

"We're looking at changing every process in the IS organization," Szegenda said. The overhaul, which involves between 25 and 50 business process engineers who report to Szegenda, is expected to take another three to six months.

Growing trend

Like every other telecommunications company, Bell Atlantic is pushing aggressively into open systems to prepare for the inevitable joint ventures that lie ahead. Communications companies will increasingly team up with one another as well as with content providers to offer network-based information and entertainment services.

The trend in "consolidation, expanding the footprint and having greater degree of influence. You'll see constant and continual change, joint ventures and alliances," said Elaine Altman, a telecommunications analyst at Farnham, Seitz, Inc. in New York.

Doing more with less and the associated productivity gains are taking their toll on IS staffers.

"From an economic perspective, what Bell Atlantic is doing makes sense," one staffer said. "But I'm working five times as hard as I did six or seven years ago. I'd like to know, where do the cuts stop?"



Bell Atlantic's Ralph Szegenda: "We're looking at changing every process in IS."

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Microsoft, Novell

CONTINUED FROM PAGE 1

works is a massive reorganization of Novell's business units.

The new Novell will comprise four business units, according to an analyst briefed by Frankenberg. The units will comprise application products (including WordPerfect and, most likely, App-

Ware); UnixWare; NetWare; and client software (such as the upcoming Mosaic client for the Internet).

Frankenberg also said he will de-emphasize those product areas that are outside Novell's core businesses, such as Novell DOS 7.0. He also confirmed plans to lay off 1,000 employees or more.

Frankenberg told Gartner Group that the main purpose of Novell's new rapport with Microsoft will be to ensure that the companies work together to develop

products to tie Microsoft clients into Novell network operating system platforms, according to Cappuccio. Frankenberg further said that he, Gates and Paul Maritz, Microsoft senior vice president, will meet three times a year to ensure that the work is going well.

Users said they will benefit greatly if the vendors are really ending their longstanding, mudslinging rivalry, which has held back the delivery of satisfactory Microsoft clients for NetWare.

The change of heart is plain good news for users who want to mix Microsoft clients and Novell networks. "If Frankenberg and Gates work together on good requests and, in particular, timely ones, everyone would benefit, and Microsoft would sell more NT in the NetWare environment," said Lisa Laing, a network systems analyst at McGill University in Montreal. "We are still waiting for a NetWare client for NT that works well."

Microsoft and Novell broke off their co-development on such a product last fall and came up with their own entirely different versions—neither of which is satisfactory. Laing said. For example, the Microsoft version, which the university now uses, lacks NetWare Directory Services (NDS) support. Microsoft has no current plans to provide NDS support on its NetWare requestor, a company spokesman said.

The detente follows the demise of the antitrust investigation of Microsoft, of which Novell was said to be a major backer.

While analysts refused to go into details of the nondisclosure briefings, they expressed approval of the directions Frankenberg outlined in his reorganization plans.

"In general, all the things he said were heartening," said Richard Buchanan, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "He has done extensive analyses of all of Novell's businesses to understand which can stand alone and compete."

Novell's Robert Frankenberg: "Microsoft-bashing will go away."

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On the product side, Novell will announce a Mosaic-based browser of World Wide Web servers on the Internet. The browser will be embedded in Novell's LAN Workplace client software, according to a user who requested anonymity.

Mosaic is public domain software that provides a view into the Web, which uses Hypertext to embed live links in one document to route the user to another server.

Novell will also provide support for Mosaic on NetWare so that a LAN Workplace DOS client will be able to use the same front end to access either NetWare or an Internet Web server, the user said.

WordPerfect is also working on a Mosaic-based product, so the Web products could turn out to be an example of the synergy Novell Chairman Robert Frankenberg is working for.

—Elizabeth Horvath

RemoteWare

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Faster CICS/6000 to rev up IBM Unix

By Craig Stedman

Later this year or early next, IBM plans to ship a faster version of its CICS/6000 transaction monitor — a move that should make the RS/6000-based software's performance competitive with real Unix transaction processing products, analysts said.

IBM's acquisition of Transarc Corp. (see story below) last week was viewed in part by observers as a way for the company to gain more control over CICS/6000 development. CICS/6000, a Unix version of the widely used mainframe CICS, is built on top of Transarc's Ecina two-tier transaction processing technology.

Both CICS/6000 and Ecina have been hindered by slow performance since they became available last year, said Rich Evans, an analyst at Meta Group, Inc. in Westport, Conn. "People don't complain about the functionality of CICS/6000," he said. "They would just like to see it run faster."

IBM confirmed that another version of CICS/6000 is due late this year or early next year. Performance "is an area that will improve over time as the product matures," said Dave Chapman, business development manager at IBM's software lab in Hurley Park, England. Between 40 and 20 customers are using CICS/6000 in production mode now, Chapman added.

Lamonts, Inc., a Bellevue, Wash., retailer, had to work around bottlenecks in Ecina's Structured File Server to get performance similar to that of mainframe CICS on a 15-user sales audit application put on

CICS/6000 in April, said Jon Reitan, director of financial and credit systems.

Lamonts is unloading batch data into a Btrieve Technologies database to avoid the bottlenecks and then merging the information back into Ecina, Reitan said. CICS/6000's throughput "wouldn't be comparable [to the mainframe version] if we weren't doing that," he said.

Performance "is a big issue right now" because Lamonts does about two-thirds of its business in November and December, and CICS/6000 has not yet faced that heavy a sales and billing work load, Reitan said. A CICS/6000 1.1.1 release that shipped this summer can handle roughly 40 to 50 transactions per second — three times more than the first version that came out last year, Evans said. The promised Ver-



sion 1.2 should get CICS/6000 into the 80 to 100 transactions per second range already occupied by Novell, Inc.'s Tuxedo software and AT&T Global Information Solutions' Top End product, he added.

IBM "still may not be the winner, but it gets them close," Evans said. "They won't have to be ashamed anymore."

Ray Schulte, vice president of software management strategies at Gartner Group, Inc. in Stamford, Conn., agreed but said the time IBM is taking to resolve the performance problems is hurting the company's ability to prepare CICS/6000 for large, mission-critical applications.

"At a time when they could be building various extensions to the product, they're back to the drawing board implementing the basic modules," Schulte said.

IBM weds a needy Transarc

IBM last week purchased full ownership of Transarc, a small company that is one of the key suppliers of distributed computing and Unix transaction processing technology. Based in Pittsburgh, Transarc will continue to operate independently as a subsidiary of IBM, the companies said.

IBM provided Transarc's start-up funding and already owned more than

40% of the company, according to industry sources. As a result, users, analysts and other vendors that have licensed Transarc's Ecina technology said they take at face value IBM's promise of a hands-off approach.

"I don't read bad things into this," said Alan Dickman, a technical staff member at US West Technologies, Inc. in Denver. "In the short term, it's not going to have any impact whatsoever,

at least on the heels of what I've heard." US West is doing exploratory work with the Ecina transaction monitor, according to Dickman.

Transarc executives said the company has been profitable for the past three quarters, but analysts noted that the company's revenue may grow by a slower than expected ramp-up for Ecina during the past year.

"The evidence is that this was a marriage of need," said Jim Johnson, chairman of The Swedish Group International, Inc. in Dennis, Mass.

—Craig Stedman

OpenVision to regroup products

By Saruchi Mohan

Hoping to be perceived as an enterprise-wide systems management company, OpenVision last week announced that it will bundle some of its products and integration service offerings.

In addition to consolidating its 25 products into 13, OpenVision will offer product suites, some of which will be integrated with third-party applications.

But some analysts took a skeptical view of the announcement as an attempt by OpenVision to position itself as a hot growth company that will soon go public.

"OpenVision bought a bunch of point solutions and tried to bundle them into a flock of systems management products," said Judith Herwitz, president of Herwitz Consulting Group, Inc. in Watertown, Mass. "Even in the best of circumstances that's hard. They haven't sold as many point products as they expected to, [and] the venture guys want them to go public."

While acknowledging that OpenVision management wants the company to go public, Rich Kreyser, senior vice presi-

dent of marketing at OpenVision, denied being pressured by investment firms. The whole exercise was motivated by user demand so "users can buy all solutions from a single vendor," he said.

Users had a mixed response to the "complete solution" approach, however. Jim Swanson, vice president at US First Bank, a New York bank, said he plans to stick to point products and not buy services.

On the other hand, Thvi Gal, vice president of information technology at Wells Fargo Bank in San Francisco, applauded the move as a step in the right direction. OpenVision's strategy is to divide its goods and services into four tiers:

- **Point Solutions**, offering the original point products.
- **Suite Solutions**, offering three to four products and some consulting to solve specific systems management problems.
- **SolutionsPlus**, offering an enhancement of certain applications.
- **QuickConnect Services**, offering OpenVision products and services along with an application from a partner.

Needful things

"I've had a framework but few products; OpenVision has the products and is attempting to fill a framework," said Will Young, an executive vice president at D. H. Brown Associates in Port Chester, N.Y.

Motorola urges cloning with new developer's kit

By Jaikumar Vijayan

The bid to spur a PowerPC desktop clone market received a boost last week when Motorola, Inc.'s Microprocessor Division announced developer's program for OEMs and independent software and hardware vendors.

For users waiting for more desktop products based on the RISC microprocessor, Motorola's initiative could mean greater and quicker availability of PowerPC products. Apple Computer, Inc. is the only major U.S. vendor to have announced a desktop product based on the PowerPC. Its PowerPC partner, IBM, plans to announce a desktop computer based on the processor in October (ENR/Aug. 1).

"It's a good move to seed the market with developer kits and get things moving with the PowerPC," said Robert Anderson, a senior analyst at A. G. Smith Automotive Products in Milwaukee. "So far, Apple has not been evangelizing the PowerPC as much as they should have."

Motorola's developer's program documents and promotes a reference design that complies with the PowerPC Refer-

ence Platform (Prep) specification using the PowerPC 603 or 604 processors. Under the program, Motorola will send the market with a developer's evaluation kit, a manufacturing kit and a demonstration system, says Steve Underwood, Motorola Corp.'s Windows NT for PowerPC.

The demo system will be loaned to qualified customers and vendors, according to a Motorola spokesman.

Analysts say they expect a significant number of companies to snap up the developer's kits, though they estimated that the real clone market expansion would happen only when the software component surfaces.

"By making Prep-compliant motherboards easily available, it certainly takes away one of the barriers to entry" into the PowerPC clone market, said Martin Reynolds, an analyst at Computer Intelligence/InfoCorp in Santa Clara, Calif.

But, he said, "The key to the clone market is Apple's operating system. If they license the System 7 operating system, the market will really explode."

Microsoft's Office 4.2 for the Mac runs out to be a memory hog. See page 41.



Hewlett-Packard computer systems
helped Spalding's worldwide revenue grow
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— David White, Spalding's CIO and
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**HEWLETT
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Fed group provides data security info

Members receive solutions, tips

By Gary H. Anthes

The National Computer Security Association (NCSA) and Computer Sciences Corp. today will announce a coalition of users, vendors and government agencies that will share information about computer security threats and solutions.

The National Incident Exchange (NIE) is intended to pull together information from widely diverse sources—including vendor products, user-derived solutions, government databases and underground electronic bulletin boards—and make it easily available to members via on-line databases, teleconferencing, hot lines, alerts and special interest forums.

"What this offers is an opportunity to deal with a consolidated view of the data security world," said George Caldwell, director of security services at Rochester Tel Corp. "This would be helpful so we don't have to hunt and fish and peck."

NIE members will have access to a new unit at NCSA called the Underground Research Laboratory. The two-person unit will search Internet bulletin boards and other hacker haunts for information about computer threats and vulnerabilities. Intelligence information will be placed into a hypertext database and made available to subscribers via web on desktop.

NIE could help corporations understand how security products work.

"These underground bulletin boards are a primary source of computer passwords and PBX codes that someone has hacked," said Mick Moritz, NIE project manager at NCSA. "But getting into the boards and staying on can be tricky."

Filling a need

"Many companies have one or two people dedicated to getting on bulletin boards to look for people targeting them," said Peter S. Tippett, director of security and enterprise products at Symantec/Peter Norton Products Group. "This would save them money and in many cases provide them with information they didn't even know was available."

Annual dues for the NIE program, which will be run by the NCSA under a member-elected management council, will be about \$5,000 for small companies and \$10,000 to \$15,000 for large firms, according to Jim Harper, director of information systems security at Computer Sciences.

At Chevron Information Technology Co. in San Ramon, Calif., two full-time people devote their time to look for computer threats and vulnerabilities. Bob Cartwright, a security technology specialist, said Chevron decided not to sign up for the NIE service because the company believes its security bases are covered and did not want to hand off responsibility to another organization.

"But for a smaller company it would be a good investment because there is no one place they can go to get everything they need," Cartwright said. "This would satisfy their needs."

NIE sponsors are hoping to make previously unavailable information from the National Security Agency (NSA) accessible to members and the public. "NSA has done probably billions of dollars of work in security product testing and evaluation," Bales said. "This information could give corporations a leg up on understanding how these products perform in different situations."

Users, vendors, civil libertarians clash over Internet rules of the road. See page 4.



NCSA's Robert Bales: NIE could help corporations understand how security products work.

Privacy issues surface

Desktop interface can track games, specific software usage

By Steve Moore

Within the next two years, managers of information systems and networks may find their jobs complicated by the challenge of protecting the privacy and security of users whose desktop PCs support the Desktop Management Interface (DMI).

The DMI, which was developed by the Desktop Management Task Force, is a set of standards through which server-based management applications will be able to remotely configure and manage desktop PCs across multiple platforms.

The potential for network and systems information intended for diagnostic or administrative purposes being used for other purposes has existed since the earliest days of network management, said Tom Nolle, president of CMI Corp. in Voorhees, N.J. "The combination of remote monitoring and remote control has the potential to turn any network into a fish-bowl," he warned.

Is spy

Network management systems are already able to peek at the contents of every packet sent across a LAN or WAN by any user.

DMI is supposed to be a broad range of PC hardware and software, network and systems management applications operating from multiple control points will know exactly which applications PC users have installed, when they access them and for how long.

"I can see value in logging what is being used on desktops so you can rationalize your software purchases, but you have to be careful to ensure the privacy of end users," said Al Bruswitz, director of information security at Rockwell International Corp. in Seal Beach, Calif.

"Users may not like the fact that LAN administrators will know what game software they put on their machines and how much they use it," said Dave Pass-

more, a principal consultant at Decisis, Inc. in Herndon, Va. "Forget the network issues and just think about monitoring application usage. That will raise a much bigger stink if DMI reports generated automatically somehow get into management's hands."

A task force official said, however, that security is the responsibility of the network operating system providers and the network service providers. "The DMI is as secure as the network to which it is attached," said Chris Thomas, director of technology and alliances at Intel Corp. and chairman of the task force.

As an interface located inside a computer, the DMI—like any other aspect of the system—could be the target of foul play. "The DMI specification did reserve space for security, but at this point it is up to the developer as to how it is provided," Thomas said.

The desktop security and privacy situation may be complicated by an emerging class of LAN remote-control products capable of taking control of processes on networked PCs without users' knowledge.

"Remote control is an issue regardless of DMI," said Richard Rolter, IS director at the Guggenheim Museum in New York. Rolter emphasized that he is not worried about DMI's effect and users in his organization because "we're not trying to be Big Brother, and in fact we go to great lengths not to be."

But Bruswitz said he expects DMI will "help us take better control and ensure we have proper licensing for software we have, as well as monitor games and other things that shouldn't be on the system and have them removed."

On the upside, DMI will ensure that corporate assets are used for business purposes only, Bruswitz said. "In some respect, you're invading their space, but you can't think of a PC as your own little private world when it's connected to the corporate network."

Network modeling tools can take mystery out of network design. See page 45.

Users eye IBM on-line order system

By Craig Seidman

An IBM plan to create an on-line system for buying and distributing desktop software remains sketchy, but several information systems executives gave the concept favorable reviews last week. Electronic purchasing will hopefully result in faster delivery and lower prices, they said.

"I can see using something like that," said Ted Kaseel, vice president of information services at Syco Food Services/Albany, a division of Syco Corp. based in Albany, N.Y. "A lot of times we do need software quickly. When we buy through dealers now, it takes a couple of days to get there."

The on-line system "could be useful, assuming that IBM gets enough [independent software vendors] on the bandwagon," said an IS executive at a large insurance company in the Midwest. "We find ourselves in a situation where speed is important, and we have to get things to users instantaneously."

IBM said a prototype of the on-line system with six of its own software products for sale is being tested by Sears, Roebuck and Co. Sears declined to comment on the project last week beyond

saying it has been able "to very cost-effectively distribute and manage software."

Several more pilots are planned for later this year, and IBM expects to go live with the service in 1995, said Kathy Howell, director of worldwide software packaging development at IBM. However, many specific details still have not been finalized.

No other software vendors have signed up for the on-line system yet, and IBM is "still trying to figure out how this would be priced," Howell said. Packaging and shipping costs should be reduced, but how much of the savings customers will see is unclear at this point, she added.

IBM is also still mulling whether it will charge customers for connecting to its global network, the medium through which the software would be ordered and delivered. And the date for starting the system depends on how the pilot installations are received, Howell said.

"It sounds like they're still sort of feeling their way," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. Microsoft Corp. announced plans for a similar offering earlier this year along with many partners, but IBM may have a better chance to sign up other software vendors, he added.

Red hot

IBM has other alternative software distribution issues in the fire. It's working with unidentified retail outlets on licenses that customers could use to project software on customized CD-ROMs, a project that will likely be publicized later this year, IBM said.

Cisco partnerships aim to ease network management

By Stephen P. Klett Jr. and Steve Moore

Cisco Systems, Inc. last week raised the ante in the integrated hub/router poker game. The players around the table with Cisco include chief competitor Wellfleet Communications, Inc. and Big 3 hub vendors SynOptics Communications, Inc., Cabletro Systems, Inc. and Chipcom Corp.

With an eye on easing network management, Cisco strengthened its ties to both Chipcom and Cabletro in the form of tighter integration of its routing technology and software in each vendor's hub platforms.

In the process, the San Jose, Calif.-based interconnecting giant further cooled its long-standing relationship with SynOptics. "We certainly are not doing any more development work with SynOptics, and our long-term relationship is in doubt," said Don Listwin, vice president of marketing at Cisco.

Cisco and Chipcom will extend their 4-year-old technology-sharing relationship by integrating Cisco's Internetwork Operating System (IOS) software into Chipcom's line of Oncore intelligent switching hubs. IOS runs on diverse network management platforms and makes the platforms appear to be a single entity. IOS automatically allocates resources and ensures that the network will support a wide variety of protocols, media, services and platforms, Cisco said.

The two companies will also integrate their management software, CiscoWorks and Ondemand, so that each application supports a window from which the other can be managed.

Savings in the long run

Analysts said the increasing focus on hub and router partnerships will eventually provide users with a single point of sale, which should ease integration—in addition to consolidated network management—increased volume discounts and cost savings by minimizing the number of boxes on their networks.

"Making their management software work together will make life simpler by making it easier to monitor our network," said Jerry Wyble, MSB network manager at Foxwoods Casino in Ledyard, Conn., which uses Chipcom hubs with integrated Cisco router modules.

The deal "should give us better interoperability and allow for better management... by giving us one piece of software to manage both environments," agreed Andy O'Neil, network coordinator at Pennsylvania State University's Center for Design and Computing.

Cisco and Cabletro are working on a similar deal, and Cabletro confirmed that a modular version of Cisco's just-introduced midrange Cisco 4500 router will be available for Cabletro's MDAC-Plus hub by the first quarter of next year.

However, analysts said they did not expect either partnership to spawn inte-

gration benefits any time soon. The two applications will be "separate packages across a common enterprise network management system, and currently the only one they both run on is SunNet Manager," said John Morency, principal con-

sultant at Strategic Networks Consulting, Inc. in Rockland, Mass. "It will take time for Chipcom to develop a device module specific to a Cisco router to run in the Ondemand NCS environment."

"These partnerships could minimize customers' choices and take away some of their flexibility. Users don't want to be forced to buy vendor A's hubs because they have routers from vendor B," said Kathryn Korostoff, president of Sage Network Research, Inc. in Natick, Mass.

Meanwhile, for some Cisco/Cabletron users, simply putting a router in a hub does not offer enough of a benefit over keeping them separate.

"We've looked at putting Cisco routers in our [Cablotro] hubs, but the only advantage is you have one fewer box to maintain. You still have separate management software that can't speak to each other," said Jon Castle, message engineer at Commonwealth Edison in Chicago.

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Delivery of stable beta version keeps Novell on track with NetWare 4.1

By Elizabeth Horvitz

Last week's official release of a beta version of NetWare 4.1 missed Novell, Inc. just another milestone on the road to shipping the product by year's end. More importantly, users said the Provo, Utah, company seems to have finally gotten its next-generation network operating system right this time.

Alpha users and beta customers who received the code ahead of the pack said Version 4.1 is now stable and relatively bug-free. "It does what it is supposed to do," said Michael Hays, a programmer analyst at the University of Michigan who has been testing the latest alpha version.

"A couple of beta users called to tell me that they are totally enamored with it," said David Cappuccio, an analyst at Gartner Group, Inc. in Stamford, Conn.

This beta delivery is an important step for Novell for two reasons. NetWare 4.1, which might advance and correct problems found in earlier generations of 4.x, is now slated to ship by year's end, about nine months behind its original ship date. Also, because of those problems, many users have put off purchasing Novell's enterprise-based network services platform until Net-

Ware 4.1 is delivered.

What the majority of users are waiting for, Cappuccio said, is Version 4.1's promised ability to provide a single global directory and user administration tool set across both NetWare 4.x and 3.x installations.

Users agreed. The "big thing we are looking for in 4.1 is prune and graft and the ability to move containers [of NDS user and resource objects] around," said Erik Duplain, a network administrator at Duracell International, Inc., a technology center in Needham, Mass. In addition, Version 4.1 will enable the manufacturer to integrate two NetWare Directory Service (NDS) directory trees that were set up at two different sites.

Major impact

Kansas State University is interested in NetWare 4.1's NetScape feature, which will extend NDS support to legacy NetWare 3.x installations, said Jim Braun, a software development manager at the Manhattan, Kan., school. This will allow users to access NetWare 3.x and 4.x resources with a single log-in and enable LAN administrators to administer both sides of the house with a single set of Windows-based tools called NWAdmin.

While Braun hasn't yet implemented his NetWare 4.1

beta code, he said that based on reading the documentation, "I think it will be one of those releases that will have major impact on industry; they have obviously listened to their customers really well."

Braun added that he was pleased to read about a Version 4.1 NetWare Loadable Module (NLM) that "allows you to prioritize processes in the server CPU, so that if



Kansas State's Jim Braun: Novell has listened to their customers really well.

an NLM is hogging CPU utilization, you can slow it down and allocate [the extra resources] to other NLMs."

Most important to the University of Michigan is the promised NetWare Control Program support for the Macintosh. Hays said. This feature worked well on the latest alpha version he tested, enabling Macintoshes to access full NetWare 4.x services, including NDS, he added.

Meanwhile, a few thousand Novell customers are buying the recently released NetWare 4.02, reassured by Novell's promise of an easy migration to Version 4.1, Cappuccio said [CW, July 25].

At least one company, U.S. Bancorp in Portland, Ore., said it sees no reason to make that migration. The bank is in the process of implementing NetWare 4.02 across some 450 branch LANs in its regional banking network. "NetWare 4.02 does everything we want," said Chris Weitz, network operations center manager at the bank.

While U.S. Bancorp can get along with the server-centric NetWare 3.11 for many of its sites, it wanted 4.x's global directory for administering all 450 LANs from a central operations center, Weitz said.

The bank waited for Version 4.02 because it fixed the major bugs that plagued earlier versions, Weitz said. In addition, Version 4.02 offers the bank's users and predecessors in terms of backing up multiple directory partitions on a single server, he added.

The one attraction Version 4.1 offers the bank is support of Novell's NetWare Link Services Protocol, which cuts down on interserver traffic across a wide-area network, Weitz said. However, U.S. Bancorp said it can get along without this feature.

Update delays cost Banyan. See page 57.

Total package

Novell's NetWare 4.1 will ship with a bundled version of its Global Message Handling System (MHS), which will use NDS instead of its own directory. Because Global MHS came out during the NetWare 3.x era, before NDS came into existence, until now it has retained its own global directory, which users had to manage separately from NDS.

Novell is already moving to converge NetWare 4.x with its WordPerfect Corp. subsidiary's GroupWise MHS messaging structure. GroupWise 4.1, which is shipping now, interoperates with Global MHS and will use

NDS as its directory by year's end, a Novell spokesman said. Novell intends to have one unified message infrastructure by late 1996 or early 1997, he said.

Also last week, Novell announced NetWare MHS Mail Slots, available on the Compuserve's Netware bulletin board. Slots can be used to automatically link message-enabled applications to MHS services and mailboxes. The applications can be written to Novell's Storage Management Facility 7 or to any of the leading messaging application programming interfaces.

— Elizabeth Horvitz

Licensing

CONTINUED FROM PAGE 1

happening on an increasing basis for the following reasons:

- Users are finding it increasingly difficult to track the plethora of software licenses agreements they are now using.
- Proposed standard license technologies such as License Server API have lost support among software vendors [CW, Aug. 15].
- Resellers, which are facing diminishing margins pressure from product commoditization, have been looking to license management services to fill a revenue void (see story page 4).
- New component-based architectures such as Microsoft Corp.'s Object Linking and Embedding 2.0 are rapidly increasing license management complexity for vendors and users alike.

As a result of these issues, bewildered users have been clamoring for a solution to their management nightmare.

While IS is just warming to the idea, it clearly has legs considering today's mar-

ket conditions. Corporate Software, Inc., a reseller in Canton, Mass., contends that it has contracted with 30% of its customers — mostly Fortune 500 accounts — to manage some of their software licensing. However, only 20% has jumped into it large scale, said Steve Bradford, director of operation re-engineering at Corporate Software.

Security blanket

Not all resellers are as convinced that software license management programs are a panacea. "Right now, most sites have difficulties in figuring out how much of what they have on-site," said Cary Jenkins, product manager of software distribution at Enter Information Services in Rye Brook, N.Y. Enter also offers license management services.

Because an accurate count of software inventories eludes most users, it is these blanket agreements with a third-party vendor that best inoculate users from the complexities of license usage, said Priscilla Tate, executive director at Techno-

What you're paying for



Source: Corbis Group, Inc., Stamford, Conn.

ogy Managers Forum in New York.

"It's not the only option, but it's a smart move," Tate said. "Technical managers do change jobs, and who is left in the know after they leave?"

While users are in need of compliance methods, vendors are looking for user-friendly ways to sell more software. For example, Microsoft is now considering a number of approaches that could be introduced as soon as early next year, said

Jeff Dreder, senior product manager of organizational licensing at Microsoft.

Microsoft is now considering totting up simply tax in licensing agreements, which are often another sticking point with users, Dreder said.

Symantec Corp. in Cupertino, Calif., launched its own easy-upgrade program earlier this year. Instead of renegotiating the site license, upgrades and maintenance agreements are handled by the reseller in any fashion that works.

Lotus Development Corp., which launched its Passport licensing program this spring, has no plans to upgrade it, a spokeswoman said. A WordPerfect Corp. spokeswoman said the company had no common agreements with resellers.

In the meantime, resellers are recruiting small vendors for inclusion in their product mix.

"I just joined this company, and my No. 1 objective is to get a reseller to handle our licensing for us," said David Solomon, president of Clear Software, Inc. in Newton, Mass. "The issue isn't us just gaining clout with users. It's a matter of who is set up to do this. We aren't. The resellers are."



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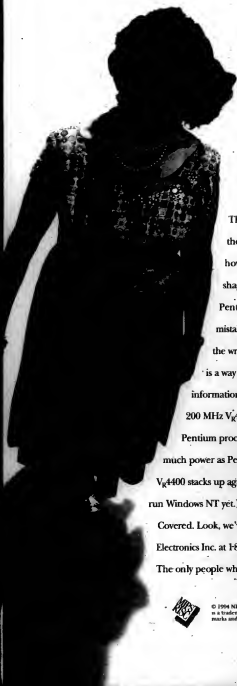
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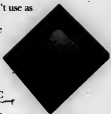
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Oil firms

CONTINUED FROM PAGE 1

Some recent examples of the changes underway include the following:

• Unocal in Los Angeles and Amoco Corp. in Chicago announced massive corporate reorganizations that in the end will mean fewer IS jobs, according to company executives.

• In late June, Texaco, Inc., Atlantic Richfield Co. and Mobil Corp. joined Amoco in announcing staff cuts that will add up to a net loss of 10,000 oil industry jobs.

• Unocal and Texaco are also cutting costs by selling off a good chunk of their domestic oil production operations.

In addition, Unocal and Amoco are restructuring To highly decentralized IS groups to form "shared-service organizations" designed to provide lower costs and one-stop IS support and services to all parts of the corporation. That contrasts with the former IS role of developing and maintaining complex mainframe applications.

Yet at Amoco, the initial enthusiasm to move to distributed computing caused some organizational chaos.

"Over the last three years, there was a

big push in Amoco to distributed computing," said Mike Wilson, manager of planning and new technology introductions. "A lot of independent decisions were made [because] each department had its own support staff."

Brassic IS cuts

Now, Wilson said, Amoco is looking to slash IS support costs and achieve economies by following corporate technology standards that a new centralized technology unit will administer. A reorganization of IS is ongoing and is expected to be complete in the next two to three months, he said.

Unocal, a \$40 billion petroleum and geothermal energy company, is also centralizing IS, which will serve three newly created finance, growth and operations divisions. To slash overhead costs, Unocal is looking to outsource more routine IS operations such as network operations and management.

The IS personnel who are left behind may find themselves advising business units on technology.

"We're becoming more of a consulting group than a do-it group," said Paul Jones, general manager of Unocal information services. "Now our job is to consult, find a best-of-breed so-

lution and go get it."

"Any way you look at it, everything we're doing now is all related to cost-cutting," said Walt Temple, manager of financial information services at Unocal's Sugarland, Texas, office. "What it comes down to for IS is working smarter and working in more of a partnership with our clients."

For example, IS is creating more rational views of data so business users can easily access the information they need in a familiar form. Also, IS is providing users with more on-line support. Still, IS is not immune to the wrenching reorganizations that are being applied as oil companies refocus on core oil exploration and oil refining businesses.

Part of the pie

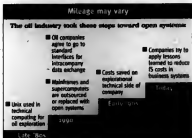
"The cutbacks affect the whole services side of the business, and IS is just a part of that," said Vivian Donohoe, chairman of Petrotechnical Open Software Corp. and a global information technology consultant at BP Exploration, Inc. in Houston. "Generally, they're not targeted at IS only. The company is getting back to the center of its core activities."

Efficiency and cost-cutting lessons learned during open systems deployment on the exploration and production side of the oil business are now being applied more broadly, according to Donohoe. But the task of migrating back-office business applications from mainframes to open systems is expected to proceed more slowly than it did in the exploration side of the oil business, users said.

"You're going to find it's

very hard to do a one-to-one mapping of work loads," said Rick Washa, technology manager of Chevron's Advanced Financial Information System in San Ramon, Calif.

Chevron is cautiously ramping up the work load of three Hewlett-Packard Co.



7500 Unix financial servers from 250 users to 550 users in January, using financial packages from SAP America, Inc. "There's no strategy here that we're going to be out of mainframes in three years," Washa said.

Likewise, a number of major oil firms are piloting client-server financial systems based on packaged Unix applications and relational databases, said Ed Wabtera, a partner at Andersen Consulting's U.S. Energy practice in Houston. But many oil refining, marketing and accounting departments may be more resistant to using client/server and open systems than the exploration groups were, he said.

"One of the things that held the oil companies [back] from going to client/server transaction systems was their concern about security and the investment they made in the [mainframe] environment," Wabtera said. "They're slowly coming around to the fact that they probably need to change."

Streamlining ahead?

Driving the IS department reductions are declining oil prices, increasingly restrictive environmental regulations and cutthroat competition. Yet the price of oil rose from \$3 a barrel this spring to about \$20 in recent weeks. This could boost profits for a streamlined oil and gas company, oil industry IS executives said.

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IS: Exploration experts

Texaco is actively restructuring its \$34 billion business, announcing this summer that it is reducing domestic oil exploration in favor of international exploration and production.

But while Texaco's IS group built open systems solutions that helped cut exploration costs, it is now contemplating how to apply those lessons to its commercial operations such as its finance and billing. IS is less than .05% of revenue, Texaco IS executives said. "We've taken some steps last year about consolidating our operations," said Don Bennett, general manager of

the information technology department at Texaco in Houston.

Re-engineering moves are well under way — both for the business and the way information technology supports it.

"As the operating groups get to their new size, we will go through a process with them to validate or modify the business process," Bennett said. As re-engineering changes the flow of business and data, further cuts will be studied. But he said it was too early to say what those cuts will be.

—Jean S. Berman

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System formation Delivery

BellSouth PDA needs price cut, applications

By Michael Fitzgerald

While Apple Computer, Inc.'s Newton became the personal digital assistant (PDA) everyone loved to slam, Simon may just be the PDA everyone wishes were cheaper.

Simon is BellSouth Cellular Corp.'s

\$890 cellular phone, fax, pager and electronic-mailbox rolled into one. The device weighs 18 ounces and has a number of PDA-like features, including a PCMCIA Type II slot, a calendar and an address book—but it lacks third-party applications. It is also available only in Atlanta-based BellSouth Cellular's markets.

Analysts said Simon should cost \$200 less and needs an open application development environment instead of its current closed one.

"Love the idea," said Amy Wohl, editor of "Trendsette," a newsletter in Rala Cynwyd, Pa. But she said usage costs for Simon were a question mark, and its

price was probably too high.

At least one user liked the product. "It sounds exactly like the types of products we were hoping would come to market, and clearly we'll evaluate it for probable pilot," said Edward N. Altman, vice president of MIS at Metro-Goldwyn-Mayer, Inc. in Santa Monica, Calif.

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BellSouth's Simon uses a pen interface for dialing and data input

Industry observers have noted that phone companies, by coming at the PDA market with a focus on voice, might have a better approach than the data-oriented computer makers (CW, Feb. 14). Simon establishes BellSouth as the first phone company to sell a PDA-type device.

Simon uses a pen interface but does not recognize handwriting. Rather, Simon has PredictaKey that constantly updates a six-letter screen as the user punches in letters with the pen. It also uses Lotus Development Corp.'s CC-Mail for electronic-mail. Other E-mail systems can be used with PCMCIA cards.

Responding to the customer

Don Norman, BellSouth Cellular's director of research, said Simon was developed in response to customer focus groups that said they were interested in a phone with additional built-in features.

"We think there are a lot of people who want information on the move," Norman said, adding that Simon targets both corporate and individual users. BellSouth expects to sell between 50,000 and 100,000 units in the product's first year.

Timothy Schmidt, a mobile computing analyst at Probe Research, Inc. in Orlando, Fla., challenged the unit's potential.

"I don't think they went the full distance" on Simon, he said, suggesting that the product should have been designed so the user could look at the screen while using it as a phone. Schmidt also criticized BellSouth's lack of applications, saying Simon suffers from the same problem that plagues Newton.

Norman defended Simon's lack of applications. "It has all the software a read warrior needs," he said.

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One, two, three bytes you're out!

Simulated baseball games via pagerlike devices help newspapers, fans endure strike's duration

By Mark Halper

The Colorado Rockies' chance of capturing the National League West pennant crumbled a bit last week, when star center fielder Ellis Burks required his wrist. At least, that's what the computer simulation said.

Despite a baseball players' strike, disconsolate and angry fans around the country are receiving news like this, including simulated accounts of games, team standings and player performance from a Skokie, Ill.-based company called Stats, Inc.

"This was an interesting year for baseball, with Matt Williams chasing Roger Maris [single-season home run record], Tony Gwynn chasing 400, and Frank Thomas chasing the triple crown," said Barry Forbes, sports editor at the *Rocky Mountain News*, a Denver-based newspaper that is printing results provided by Stats. "We thought it would be interesting to see if it would all happen."

Added to statistics

Another way some baseball addicts are staying off withdrawal is by viewing this information on a portable pagerlike device. In an LCD display mounted on a Motorola, Inc. pagerlike device called SportsTrax.

After reformatting the information provided by Stats, Motorola broadcasts simulated Toronto Blue Jays and Chicago White Sox games via satellite in the

900-MHz SportsTrax pocket-size receivers, said Mike Marrs, a manager at Motorola's derivative technologies division in Borton Beach, Fla.

"We were looking for something to turn the lemon into lemonade," Marrs said of the strike, which killed about 100 games in its first week.

Newspapers need it

As of late last week, Stats was sending on-line and faxed results to close to a dozen North American newspapers. The service provides a near ready-made way to fill the dreaded "holes" on pages that editors had counted on filling with actual game reports.

"We're a tabloid newspaper and sports is one of our big things," said Claran Ganley, a news reporter at the *Toronto Star*, which last week prominently displayed longer-in-chief stories of World Series champion St. Louis Cardinals on page three. The paper was also sponsoring a contest giving away SportsTrax gadgets to fans it selected as managers of simulated teams.

"A lot of newspapers will go back and write about historical things that happened to the team, but we only have one year of history," Forbes said.

Before the strike, Motorola had been selling the \$149 sports pagers—including three years of home-team broadcasts—in Toronto and more recently in Chicago.

Jersey City, N.J.-based SportsTicker, a

Stats competitor and Dow Jones & Co. subsidiary, had been selling real-time game information from reporters, or "human transponders," attending games, Marrs said. These reporters would enter game developments on laptop computers and transmit them to central SportsTicker computers for retransmission to Motorola.

With the advent of the strike, Stats stepped in as a source of simulated information by using a lineup of five clustered Digital Equipment Corp. VAXes and MicroVAXes and about 40 PCs running a variety of game simulation software.

Injured players

Computer probabilities included the strike only the obvious action such as hitting but also less ordinary events such as injuries, as in Burks' case.

The Rockies' outfielder, who had only recently returned to the pre-strike lineup after missing most of the season, had hit three home runs in the Rockies' first two simulated games before injuring his wrist.

"He can pinch hit, he can play defense for an inning or two, but he can't play a

whole game," Forbes said.

Once the strike ends, Stats will resume selling real baseball statistics. It also sells data from other sports, said Arthur Ashley, Stats' vice president of systems.

At that time, Motorola will probably use both Stats and SportsTicker as sources for real game information for its sports pager, Marrs said.

Red hot sales

The company has sold "well into the thousands" of pagers in its two pilot markets and is ready to roll the product in other cities, according to Marrs.

That was not always the case. Marrs noted that Motorola had initially worried about objections from traditional radio broadcasters, but those objections never materialized.

And early internal concerns that Motorola's may have developed a fan-to-fan sales program have subsided, at least for now. Marrs said Motorola has sold "well into the thousands" of units.

"We were concerned that this could be a hush hoop... But the clubs are embracing it, and the league is embracing it," Marrs said.



The Motorola SportsTrax pager alerts fans to real-time game developments with things such as a stolen base, a home run, a hit, or an injury during a rally.

Baggage system woes costing Denver airport millions

By Jean S. Bortman

A meter is still running at the Denver International Airport where a malfunctioning computerized baggage system is expected to delay the facility's opening until the end of the year.

As millions in delay costs continue to mount, the city has decided to spend another \$50 million on a temporary manual system. Moreover, it is selling a \$225 million bond issue designed to delay delay costs, spokesmen for the city said last week.

The Denver International Airport was supposed to open in March, but a decision was made in May to postpone its opening until a computerized baggage system could be brought on-line.

Dollars down the drain

To date, the airport has cost the city about \$32 billion, not including airline and Federal Aviation Administration costs for constructing the facilities. The daily \$1 million cost of the delay includes operations costs and about \$600,000 for interest on bond issues. Airlines are paying 80% of the interest and the city 20%, Denver officials said.

Long suffering

Denver International Airport will replace baggage system, which suffers from two short runways and long flight delays, said Briggs Gambin, a spokesman for Denver's mayor.

The airport's baggage system, which was to provide unified handling of baggage for all airlines, has cost \$40 million. The automated system, which uses IBM-compatible PCs to direct 4,000 baggage carts over a 20 mile-long automated cart system, was built by BAE Automated Systems, Inc. in Carrollton, Texas [CW May 16]. However, tests showed it damaged baggage and was unreliable because it directed baggage to the wrong flights. Consultants have yet to resolve the problem.

Heeding the advice of lawyers, BAE officials would not comment on the problem. Meanwhile, until the baggage system is fixed, Denver's Stapleton Airport will continue to serve the city.

To open the new airport, Denver has agreed to spend \$50 million to build a conveyor-driven system that relies on people rather than computers to direct baggage-loading. Denver plans to contract with Rapistan Demag Corp. in Grand Rapids, Mich., to build the conveyor-driven system, said Briggs Gambin, a spokesman for Mayor Wellington Webb.

That the conveyor and computer-driven cart systems could be combined as the BAE system last Wednesday, city officials met with managers

from United Airlines, the largest carrier that will serve Denver, to discuss the ongoing baggage-handling crisis. The airlines still want the BAE system to be repaired, Gambin said last week, but United managers were told

of the city's decision to install the Rapistan conveyor system to get the airport open by 1995.

Most U.S. airports use separate conveyor-baggage systems in each airline's terminal area, but Denver still plans to have a unified system.

The Rapistan system will rely on traditional manual baggage-transfer methods used at most airports. Rapistan has built baggage systems for the Vancouver airport in British Columbia and the Bangkok Airport in Thailand, according to the company.

Guaranteed shipment

This time, the city has assured timely shipment of the conveyor-driven system by including provisions that offer a bonus for early completion and add penalties for running late. said city attorney Steven Nipkow. The target date is now Dec. 31—nine months after the original March 9 opening date.

Ironically, Denver International's baggage system was supposed to make it more efficient than other airports. Briggs said. But Denver has not entirely given up on the idea. "It will shave minutes off turnaround time per flight and hopefully hours per day," he said.

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Computer Industry

Briefs

Oracle ends talks

Oracle Corp. said it has ended discussions with Gupta Corp. concerning a possible merger and divestiture of Gupta holdings. Oracle began ditching its Gupta stock almost immediately after its 7.7% stake was disclosed last month, following a reported rebuff from Gupta. Oracle said it will focus instead on its own low-end client/server tools.

Phoenix sells unit

Phoenix Technologies Ltd. in Norwood, Mass., has sold its Printer Software Division to Xerox International, a Framingham, Mass., network image acceleration developer. The division went for \$5 million, a 15% equity stake in Xerox and a one-time performance-based payment.

Adobe ventures out

Adobe Systems, Inc. and Stambecht & Quist Group have launched Adobe Ventures L.P., a venture capital partnership for emerging software companies. Adobe provided \$25 million to act as sole limited partner.

Cheyenne improves

Cheyenne Software, Inc. reported revenue of \$97.7 million for fiscal year 1994, ended June 30 — a 72% increase from last year. Cheyenne was expecting 150% growth in that period and had posted an 184% increase in revenue from 1992 to 1993. Earnings were \$32.5 million, compared with \$20.7 million last year. Revenue for the quarter was \$25 million, which was within the company's expectations.

SHORT TAKES AT & T Global

Information Solutions has agreed to purchase CompuLink, Inc., a Dryden, N.Y., software development company. Watermark Software, Inc. has received a round of financing worth \$3.35 million. ... Applied Management Corp. will sell 125 positions within 60 days and will continue to cut operating expenses.

Thinking Machines succumbs to Chapter 11

Analysts, users remain high on MPP's promise

By Ellis Bocker

After nearly a year of searching for investors or a cash-rich buyer, pioneering supercomputer company Thinking Machines Corp. entered Chapter 11 bankruptcy protection last week.

The 10-year-old Cambridge, Mass., firm said it will immediately fire about one-third of its 425 employees. It will retain a small group to support the 112 computers it has sold to date. The firm also hopes to license its technologies to others — which will be difficult, an analyst said, now that companies such as IBM and AT&T Corp. are selling supercomputers.

Thinking Machines, which was lauded for its early implementation of so-called massively parallel processing (MPP), lost \$20 million on sales of \$82 million last year. Its woes, however, should not be taken as an indication that MPP has been oversold or that this form of high-performance computing will not have a dramatic impact on commercial systems in the coming years, according to industry analysts.

"Clearly this was far more indicative of Thinking Machines' situation," said Jeff Canin, a technical analyst at Salomon Brothers, Inc. in San Francisco. Had the company kept its expenses in line with realistic revenue expectations, it would not have run aground, according to Canin.

Thinking Machines was also badly hit by the downturn in government funding of high-performance computing projects.

The upside

In the shadow of the Thinking Machines shake-up, other high-performance computer vendors were making news. Pyramid Technology Corp. in Saratoga, Calif., announced a joint development and distribution deal with Information Management Co. in Edison, N.J., for distributed transaction processing tool. Gray Computer Corp. announced a \$9.2 million joint project with the National Security Agency to develop a Cray-3 Super Scalable System, a computing vector and scalable parallel processing.

"In my view, they never developed the organizational focus on the commercial market you'd need to break in," said Richard Winter, president of Winter Corp., a database consultancy in Cambridge, Mass.

Thinking big

Over the next couple of years, Winter predicted, databases will offer large-scale decision support using MPP or scalable multiprocessor architectures. A massively parallel system, Winter noted, can churn through a giant customer database 100 times faster than the fastest serial mainframe.

In fact, one of the most publicized MPP-based decision-support applications, American Express Co.'s Quantum project, is based on Thinking Machines' CMS system.

Although details on Quantum are sketchy, the project is aimed at "data mining" the half-trillion bytes of data relating to how the company's 36 million credit cards have been used for the past three years.

"The program is up and running, and the equipment works well," said Bob Drummond, president and chief executive officer of Epilog, Inc., the Burlington, Mass., subsidiary of American Express that built Quantum.

"We absolutely believe in [this technology]. ... We know it works," Drummond said. While "very sad" about Thinking Machines' situation, Drummond said Epilog never put all its eggs into the Thinking Machines basket. Its next two applications, for different customers, will run on a Sun Microsystems, Inc. SPARCstation and an IBM Powerparallel System SP2.

Merger boom doesn't faze software industry

By William Brandt

Mergers and acquisitions of software companies are at a fever pitch, according to a study released last week by Broadcast Associates, an investment banking firm in Fort Lee, N.J.

Transactions in the software and information services sector of the computer industry doubled from \$2.7 billion in the first six months of last year to \$6.4 billion during the same period this year, the study said.

"This level of merger and acquisition activity is good news for software consumers," said Alex Ellison, managing director at Broadcast. "Merged larger companies can offer a broader breadth of products. The end result is more competition and lower software prices."

This spike was due mostly to a number of large acquisitions that occurred during the first six months of this year. Eight of these acquisitions were valued at more than \$100 million each, totaling \$2.5 billion.

While the Broadcast numbers may mean there is a spike in merger activity in the software industry at large, they do not indicate any major shifts or new trends, said Jeffrey Tarter, editor of "Soft Letter," a newsletter in Watertown, Mass.

Tarter said when Novell, Inc.'s purchase of WordPerfect Corp. is removed from the mix — a deal that placed the value of the combined companies at \$1.8 billion — it was actually an average year in the PC software industry. Moreover, even with the flurry of merger and acquisition activity, the face of the PC software industry has not been altered, he said.

"Almost all the same applications that were available on the market before are available today," Tarter said.

However, some significant changes have occurred in recent months. For example, history was made with the merger of Adobe

Systems, Inc. and Aldus Corp., a deal valued at \$245 million. Because the combined companies would have dominated the design and illustration market, the Federal Trade Commission for the first time said it would block the merger unless Aldus sold Freehand, its illustration and design program. Aldus must now turn the software package over to its former owner, Alltype Corp., by the end of next year.

Changing the deal

The way acquisition transactions are financed has changed dramatically in the past year as well. Stock deals accounted for 45% of transactions in the first half of this year, compared with 35% during the same period in 1993. By comparison, cash deals accounted for 34% of mergers during the first six months of this year, down from 44% during the comparable period in 1993.

'No-names' take off

By and large, the software industry enjoys continued growth, said Jeffrey Tarter, editor of the "Soft Letter" newsletter. While the top-end personal productivity market has matured, a new breed of no-name software applications is now moving up in the market, he said.

For example, Edmark Inc. in Redmond, Wash., is a \$10.1 million concern. Edmark makes educational software for DOS and Macintosh platforms. Micro Star Software in Carlsbad, Calif., is a \$4 million company that makes computer games. Microstar Software, Inc., a \$5 million company in San Diego, makes language translation software. Many of these small companies are enjoying a growth rate that exceeds 100% per year, Tarter said.

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Core competence

Apple is enjoying relatively good financial health right now and has just completed a difficult hardware transition, but I sense that the hard part is just beginning for The Other PC Company.

Apple is arguably the most consistently innovative company in the business. But it is going in a lot of different directions at the same time, and unless it gets focused, it may spin out of control.

Depending on whom you talk to at Apple today, you'll hear that the company is committed to the corporate market, small business, the home, education, personal digital assistants, electronic services and set-top boxes. No one has been able to establish a beachhead in all those markets. And Apple won't either because it's got other worries right now.

First, there's the pie-in-the-sky march of Microsoft and Intel. Apple devotion still at the citizenship of Windows, but the fact is that with technologies such as Plug and Play, Peripheral Component Interconnect, OS/2 and Chicago, PC makers have done a commendable job of recreating most of the major features that made people buy Macintoshes in the past. And you can buy PCs from a couple thousand different suppliers.

Meanwhile, Apple has yet to license its System 7 operating system, which instead isolates it from the mainstream. The company isn't promising a major overhaul of System 7 until a product code-named Gershwin ships in 1996. Gershwin will feature pre-emptive multitasking, something PC users have had since 1982. While its list of features, including intelligent agents and three-dimensional graphics, sounds impressive, there's plenty of time for Microsoft to launch a vapor stink of its own.

Then there are the growing pains that Apple will continue to face in moving from the 68000 architecture to the PowerPC. The Power Macintosh certainly are fast, and Apple has all but removed the Macintosh price premium. But native Power Macintosh applications have been slow in coming, and users won't buy Power Macintoshes to run the applications they have a little more slowly.

If Apple is as serious about the corporate market as it claims to be, it needs to train its guns on getting Power Macintosh commitments from software suppliers (see story page 41), improving the product's rudimentary Windows support, licensing System 7 to respectable hardware makers and marketing the hell out of the machine's price/performance advantage. With that much to do, it's hard to see where marginal products such as eWorld or the Newton fit in.

Apple can try to be all things to all users and settle for 10% corporate market share. Or it can focus on doing one or two things really well. Right now it seems to have selected option A. I'm not sure that's such a great choice.

Paul Gilkin
Paul Gilkin, Editor
Internet: pgilkin@cw.com

IT'D JUST LIKE TO SAY
THE BOARD HAS
SUPPORTED MR. AKERS
RIGHT UP TO THE
VERY END.



Rich Tennant is on sabbatical. This is one of his classic cartoons from 1983.

Forgot the Mac

"Multimedia Comes Down to Earth" [CW, Aug. 1] outlined only a small handful of the many multimedia packages available. I can't believe you completely left out the biggest technology leap in desktop multimedia in this decade.

Multimedia started on the Macintosh and is still best there. The tools and abilities of the Mac greatly outweigh those of the PC. So why did you barely even touch that platform?

Quicktime, a sound and video capture and playback technology invented by Apple and available on Macs and PCs, is the heart of the best multimedia packages available today. The best part of the article was the title graphic, which is a collage of Quicktime movies.

*Calevin Carter
Dallas*

DOJ should mind its own business

Microsoft's pricing formats and disclosure contracts are a matter to be decided between Microsoft and its customers alone.

Antitrust statutes are nonobjective and infinitely elastic, and they represent the law of guilt after the fact. Apart from fraud, for which adequate laws exist, there is no such thing as an "unfair" trade practice. Capitalism is founded on the principles of property rights, freedom of contract and freedom of trade, not some loopy half-baked ideas like "enforced competition" and "level playing fields" [CW, July 25]. Commercial law

should not be based on inappropriate sports metaphors and hysterical conspiracy theories.

*Brad Alos
Toronto*

Power play

As a 40-year veteran who has been a supporter of IBM and Sun for many years and who needs the help of both, I offer this simple, if perhaps unoriginal, suggestion.

IBM should consider dropping support of its proprietary operating systems, such as AIX and OS/2, and equip its new PowerPC with Sun's Solaris and Next's NextStep. Applications would be forthcoming immediately from the independent software vendors. Sun should consider dropping SPARC and launch a new line of hardware based on the PowerPC.

*Robert L. Ray
Martin County, Fla.*

tolerate this kind of public folly from its managers. Customers are too astute today to be taken in by this fluff. Thank you for continuing to report accurately on these changes.

*Carter Priess
Bloomington, Ill.*

Wait for the sequel

Carole Patton hit the nail on the head with "Chicago lacks beef" [CW, July 11]. As a LAN administrator, I get tired of hearing users proclaim that Chicago will become the panacea of graphical user interfaces. Our organization is pushing technology on a reluctant sales force and betting that Chicago will increase usability by allowing them to, in Patton's words, "shuffle icons on the desktop." Microsoft Explorer is not as intuitive as our interim solution, PC Tools for Windows 2.0.

I am content to wait until 4.1 hits the streets.

*Richard Alfani
Lakewood, Calif.*

IBM double-talks

I was not surprised by Richard Sullivan's (IBM) response to "So long, CC-Mail" [CW, July 11], which incorrectly indicated that IBM would cease its policy of proactive marketing of CC-Mail while actively competing against it.

The double-talk from Sullivan reminds me of IBM "strategic product" statements that in the past have turned to vapor as conditions changed. I had hoped that the new IBM leadership would not



Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Lubert, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochin Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include a phone number for verification.

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Integrated, multiprotocol Boot-ROM	X	X		
ISA Plug-n-Play Compliant	X	X	X	
Multilevel Security Features	X	X	X	X
Asset tracking	X	X	X	
PC tattooing	X	X	X	
Optional Desktop Management Software	X	X		
Bi-directional parallel port	X	X	X	X
Desktop Management Interface (DMI) ²	X	X		



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- One available 32-bit VL-bus slot
- 210-MB, 14-sec Fast-IDE hard drive*
- 32-bit Fast-IDE local-bus hard disk interface
- 8-MB RAM, expandable to 16-MB

- Intel 50- and 66-MHz 486DX2, 100-MHz DX4, upgradeable to Pentium Overdrive
- PCI architecture
- Standard 256-KB second-level write-back cache
- Four mass storage shelves; four expansion slots
- Two available 32-bit PCI expansion slots
- 210-MB, 14-ns Fast-IDE hard drive*
- 32-bit PCI IDE hard disk interface

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- Free three-year limited warranty for parts and labor²



HP Vectra XM2

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4. How many RDBMS platforms do your applications run on?

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VOICE RECOGNITION TAKES
ON THE DESKTOP, 40
NEW PRODUCTS, 43

Borland delivers on promise to developers

By William Brandel

When Borland International, Inc. shipped dBase for Windows earlier this month, it did not just deliver on a product that was four years late. The company also delivered on an 18-month-old promise to provide developers with the means to develop to a common database engine across a number of applications at a new site.

dBase for Windows joins a growing number of Borland and Novell, Inc. applications that can take advantage of Borland's Database Engine (BDE) technology. For example, Novell's (formerly Borland's) Quattro Pro spreadsheet and WordPerfect Corp.'s Inform Personal Information Manager take advantage of BDE. Paradox for Windows, Interbase, and soon Borland's ReportSmith report generator will also support BDE when it ships.

BDE is a boon to developers who work with Windows and any of the aforementioned applications be-



Borland's dBase for Windows takes advantage of its Database Engine technology, which allows developers to work with a common database engine across applications.

cause it provides one engine to which they can write. Developers said they like BDE because it allows them to concentrate on building programs that can run against applications that support BDE instead of focusing on optimizing back-end services.

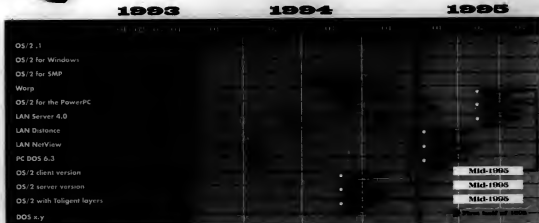
"The developer can just write a few routines that call functions to this engine," said Tom Howie, a principal of Visual Solutions, a consultancy in Santa Clara, Calif. "The engine doesn't care what client is calling it; it will just return what is asked. You give it the query information and value, and boom, it's there." BDE supports Integrated Database Application Programming Interface, Borland's database interface, which in turn supports Microsoft Corp.'s Open Database Connectivity (ODBC). This means the engine also gives developers the ability to build applications that take advantage of a bevy of back-end services. This is beneficial to corporate developers who often have to build application front ends that must

Borland, page 41

Can IBM move at "Warp" speed?

The slim Warp version of OS/2 paves the way for a string of additions to the OS/2 family

■ Beta version
■ Final version



By Ed Scanlon

While IBM's Personal Software Products division has had a pretty good 12 months with OS/2 2.1 — sales crossed the 5 million unit mark in the spring — the company faces an even more critical period during the next year.

With Microsoft Corp. expected to deliver a shiny new version of Windows NT this year and its first 32-bit desktop

operating system, code-named Chicago, early next year, it is critical that Personal Software Products deliver its upcoming operating systems on time.

Next up is Warp, the code name for the 4M-byte version of OS/2. Warp will serve as the base for several versions of OS/2 over the next year or so. Like OS/2 for Windows, it can be loaded directly on top of existing copies of Microsoft's DOS and Windows.

Besides increased performance in

less memory, Warp features a snappier-looking interface with three-dimensional icons, support for Microsoft's Windows for Workgroups 3.11 and a much simplified installation process.

Personal Software Products recently announced it will release a BonusPak with Warp that consists of a variety of productivity desktop applications as well as IBM's Person-to-Person conferencing software, which permits immediate access to on-line services and a

white-board feature.

Warp will serve as the bedrock for the client and server versions of OS/2 expected in the first half of next year.

Already, one problem area appears to be a version of OS/2 for the PowerPC. The company hopes to ship that product by year's end, but with the package not expected to reach serious beta testing until late fall, it is unlikely it will be available in general release until late in the first quarter of 1995.

Voice recognition takes on the desktop

Falling prices, Windows-based systems feed trend

By Ellis Boush
CHICAGO

New products, pricing and standards suggest that vendors of voice recognition systems are moving rapidly toward a single goal: the speech-enabled desktop.

Fueling activity in the \$300 million industry are the arrival of Windows-based systems and tumbling prices that have cracked the \$500 barrier.

The trend toward automatic speech recognition looks strong, according to Voice Information Associates, Inc., a market research firm in Lexington, Mass. (see chart at right). The firm projects an overall growth rate in automatic speech recognition of 35% between 1992 and 1997. That growth will be led by "computer control" and telephone applications.

Meanwhile, according to industry observers, the big arrow in voice input software is that the PC platforms it runs on—typically 33-MHz 486s or higher—are now powerful enough not to require a specialized digital signal processor chip

on a separate card.

For example, when Dragon Systems, Inc. in Newton, Mass., announced the Windows-based implementation of its DragonDictate product in late June, it said the system would work with standard 16-bit sound cards from a variety of sources.

The new product family ranges in price from \$395 to \$1,095, depending on vocabulary size.

Users want to talk

But although Dragon is closer to a shrink-wrapped product than any other to date, neither it nor its competitors have committed to a mass-market channel, noted William Meisel, editor and publisher of "Speech Recognition Update," a newsletter in Encino, Calif.

"The last and by far the biggest impediment to a mass market is the fact that these systems take significant [system] resources," Meisel said, adding that although they work well on 486-class machines, the systems require at least 8M bytes of RAM for even the smallest vocabularies.

Nevertheless, users seem increasingly

interested in the concept of orally addressing their machines either to control a piece of software or dictate a document.



Source: Voice Information Associates, Lexington, Mass.

Meisel cited a recent Microsoft Corp. survey listing speech interface as one of the Top 3 interests among end users.

Still, even leading vendors remain cautious about predicting that voice will become a dominant form of input any time soon.

"We don't want to repeat the hype and disappointment that the pen interface people encountered," one industry executive said.

Howard Fields, director of marketing at IBM's speech and pen business unit, argued that the real challenge is to offer users alternative input systems such as speech and pen "when they need them ... so the user can slip between modes easily."

Fields also made the oft-heard argument that speech will not become a mass phenomenon until systems support continuous speech. Currently, discrete

speech systems, whereby users must pause between words, are the norm.

One encouraging sign is that the industry has begun to coalesce around standards backed by Microsoft and WordPerfect Corp.

Microsoft has announced a Digital Signal Processor Resource Manager interface (RMI) specification for Chicago, the next version of Windows. The RMI provides a vendor-independent interface for signal processing resources, such as those found in digital signal processors. Supporters of the RMI include Compaq Computer Corp., IBM Microelectronics and Intel Corp.

A consistent voice

Separately, Microsoft announced in late June an open speech application programming interface (API) specification for its 32-bit Windows platform. The first implementation of the API will support Chicago and Windows NT. The company's plans come on the heels of those of WordPerfect, which a week earlier launched an effort to define a common speech recognition API.

The two efforts share many of the same vendor participants, including Dragon Systems and Kurzweil Applied Intelligence, Inc., two of the Top 3 speech vendors. The third, IBM, is following the WordPerfect effort.

The WordPerfect group said it hopes its API will provide a consistent voice interface for applications and make voice input more efficient for some tasks than a keyboard or mouse.

WordPerfect plans to offer speech-enabled versions of its Windows applications by early next year. In the fourth quarter, it is scheduled to release the API as part of its PerfectFit Software Developer's Kit.

"Gotta love notebook computers. I'm halfway through my spreadsheet, 25,000 feet up, I'm on a roll, and my battery wimps out on me."

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Dell Latitude XP D14/40 TFT	14:48
OLD RECORD FOR 486 MONO:	12:07
IBM ThinkPad 350C (SL/2S) passive	8:50
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Briefs

Necx offers on-line shopping

Necx, a Peabody, Mass.-based distributor of integrated circuits and computer products, has announced it will make its Desktop Channel—an on-line computer shopping network—available to resellers through a new partnership program. The Desktop Channel gives users toll-free access to browse through more than 30,000 PC products from more than 800 vendors. Under the new program, resellers will be able to offer the service to their customers.

Alaris, NexGen pair up

Fremont, Calif.-based Alaris, Inc. will serve as a primary developer and manufacturer of motherboard and

system products based on NexGen, Inc.'s, Nx586 Pentium-class processors, under the terms of an agreement between the two companies.

AT&T GIS adds to Globalstat

AT&T Global Information Systems has announced new Pentium configurations of its Globalstat desktop system line. The new 90-MHz Pentium-based Globalstat 900 systems feature 64-bit graphics, 64 bytes of memory, 3M bytes of dual-ported video RAM, up to a 520M-byte hard drive and EISA bytes of write-back cache. They come preinstalled with Riberent, Token Ring or Novell LAN adapters. The price for each system starts at approximately \$3,618.

The company also announced a new line of systems available in several 486 options with prices starting at about \$2,000.

Microsoft hits Power Mac users with hefty resource demand

By Mark Halper

Less may sometimes be more, but Microsoft Corp. was apparently not in a minimalist mind when it developed its resource-hungry office productivity software for the Power Macintosh.

Microsoft Senior Vice President Pete Higgins said the company recommends that users set aside 35M bytes of hard disk space for Microsoft Office 4.2 for the Macintosh. The power user will want 60M bytes, while some users could get away with as little as 15M bytes, he said.

Memory demands may also surprise Macintosh users accustomed to applica-

tions that in the past required less space than their Windows counterparts. Microsoft recommends users load their Power Macintoshes with at least 4M bytes of RAM for the Office package. Office's constituent programs — the Excel spreadsheet, Word word processor and PowerPoint presentation — require 4M bytes, 4M bytes and 6M bytes, respectively.

Microsoft plans to ship Excel for the Power Macintosh next month and Word and PowerPoint in October.

For Power Macintosh and 68000-based Macintosh users, Office's resource-demanding architecture will arrive on the heels of another memory-intensive

piece of software — Apple Computer, Inc.'s forthcoming System 7.5 operating system. Apple is urging users to deploy 16M bytes of RAM for System 7.5's advanced drawing and communications features as 8M bytes if they are not using these features.

Adding it up

Since the Power Macintosh comes standard with 5M bytes of RAM, users who adopt both Office 4.2 and System 7.5 must add at least 8M bytes of RAM to their systems and perhaps more. With memory selling for about \$300 per 64-Mb module, users will shell out \$800 or more to outfit their Power Macintoshes.

The news of Office's requirements received mixed reviews from Macintosh users, ranging from annoyance to begrudging acceptance.

"This is the continuing saga of inexpensive hardware resources breeding larger applications," said Dave Lustig, manager of network services at Bose Corp. in Framingham, Mass.

As an information systems worker, Lustig runs 32M bytes of RAM in his Power Macintosh, but the average worker has about 8M bytes. With software requiring twice that amount, any firm will be challenged "to keep the company consistent in the version of a program it runs," Lustig said.

Valerie Takumoto, a technical staff member at The Aerospace Corp. in El Segundo, Calif., said she shudders at the thought of upgrading some 2,000 Macintosh and Power Macintosh users in her organization. "How long do you think it will take me to upgrade 2,000 users?" she asked.

Takumoto said part of the memory demand comes from some of the fancier but less important features Microsoft built into Office products such as IntelliMouse, Word's self-correcting spell feature.

"They put things in I don't really need," Takumoto said. "IntelliMouse is cute, but I have a lot of people who can do without it. Microsoft has made a memory hog and a hard drive hog."



David S. Hughes

Users to Microsoft: What took so long?

Power Macintosh users received Microsoft's recent announcement of near-term availability of the Office software suite for the Power Macintosh as bitter-sweet news.

Office 4.2, due to ship in part next month and in full in October, will be a sweet addition to the still fledgling world of native Power Macintosh software because without it, Power Macintosh users lack the highly popular Excel spreadsheet program that is tailored to the system.

At the moment, they are still settling for emulated versions written for the 68000-based Macintosh or for Windows machines. The Windows version is painstakingly slow on Power Macintoshes.

But users said they were angry that

Microsoft is just now offering Office for the Power Macintosh.

"I'm going to be screaming at them," said Dave Lustig, manager of network services at Bose Corp. in Framingham, Mass. "What Microsoft has done with the PowerPC is reprehensible. It was unable to get out the most widely used spreadsheet in a timely manner."

Valerie Takumoto, a technical staff member at The Aerospace Corp. in El Segundo, Calif., was equally outraged. "What they said to the Apple world was, 'We're not going to change our schedule for you guys,'" she said.

Microsoft Senior Vice President Pete Higgins explained that the company wanted to make sure it had reliable, working versions available.

— Mark Halper

Borland

CONTINUED FROM PAGE 39

connect to a number of databases using different query protocols. The Borland paradigm also provides benefits to its development/user base without locking out other popular desktop databases such as Microsoft's dBase and Access.

"If you're developing in C++ or Pascal or a language like that, then BDE becomes quite important to a corporate user," said Ralph Mickelson, partner at OmniVision, a development consultancy in Highland, Calif.

Because BDE is compatible with ODBC and provides native connections to different database engines, it broadens the application functions that a corporate developer can build into an application. It also hides many of the function nuances that have been built into applications as they evolved.

"For example, dBase and Paradox have different indexing structures," Mickelson said. "So without BDE, you would have to index each differently. With BDE, you don't have to worry about

the applications' incompatibilities."

While BDE largely is a developer audience, its capabilities ultimately affect database end users. Because it allows the developer to incorporate more flexibility into back-end services and applications, end users — albeit unknowingly for the most part — will be the ones who take advantage of these capabilities.

"Now if an end user wants to copy an Oracle table over to dBase, they don't have to worry about the data types or formats," Hovis said. "But Access, which is [compatible with] ODBC, would force you to use some type of format converter to do the same thing. You would have to do something like change the table to a different format and then try to copy it again."

Of course, BDE technology is based mostly on Borland's and Novell's application technology and is confined to database-type applications so far.

"There is no question that for customers it is good to have a common engine for product lines," said Nicole Roth, an analyst at International Data Corp. in Framingham, Mass. "But whether one person wants to use just Borland's products is another question."



"Oh boy, I got a notebook. But it's not powerful enough to do the jobs I used to do on my desktop. For me, it's good that does me..."

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PDA market stays shaky but active

By Michael Fitzgerald

The plodding personal digital assistant (PDA) market took one step backward and three steps forward recently, but the net effect was very little ground gained. The honor of PDA, in a pioneer in the PDA world, "doesn't mean a market for those kinds of devices won't exist," said William Abinski, an analyst at BIS Strategic Decisions in Norwell, Mass. "It's really a matter of it being a product before its time."

EU's death did not deter several other announcements of handheld computers. Hewlett-Packard Co. released the 390LX, an updated version of its 190LX pocket organizer; Dauphin Technology released the DTR-2, an update of its earlier handheld; and Texas Microsystems, Inc. released the prototype of its Soldier's Computer, nicknamed Grunt.

Of the three, analysts and users responded most favorably to HP's strategy. HP has had the most market success, selling some 200,000 units of its first two handhelds, which came with Lotus Development Corp.'s 1-2-3 spreadsheet. The 190LX's screen had a tendency to detach from the body of the unit, and the new version fixes that problem. A major

new feature in Quicken, Inc.'s Pocket Quicken, a business expense and personal finance organizer.

"The ability to track expenses on the road is really valuable," said Stanley Deborowicz, data center manager at Bergen County Utilities Authority in Ferry, N.J.

John Beson, palm-top product manager at HP, said the 390LX was "the last thing you'll see from us in the handheld realm in 1994." He said HP was considering introducing a PDA with the Geos operating system from Geoworks, Inc., which HP bought a stake in last year. Beson also said HP may consider putting 386-class power in the organizer form factor by adding Intel Corp.'s VLSI Technology, Inc.'s stunted handheld chip set, known as Polar.

Revamped replacement Meanwhile, Dauphin, in Lombard, Ill., brought out a 2.7-pound version of its Desktop Replacement (DTR) product. The DTR-1 has been a disappointment, selling less than 4,000 units, according to Alan Yong, Dauphin's president.

The company has completely revamped the 9-in. by 5-in. by 1-in. product, giving it a faster 25/50-MHz IBM 486SLC2 chip, adding PCMCIA and wireless communica-

tions capabilities and expanding the keyboard from 75% of full size to 90%. It also has a 128M-byte hard drive and 4M bytes of RAM.

The \$3,500 DTR-2's main feature is a built-in sound system that can recognize up to 500 words for voice annotation, data input or menu navigation.

"The reason most of our customers are currently evaluating DTR-2 is because of the voice recognition capability," Young said.

Analysts said they think Dauphin offers an interesting technology but remains lukewarm about the company's prospects in the market.

Meanwhile, Texas Microsystems introduced a prototype for its Soldier's Computer, a 3½-pound box that fits in the thigh pocket of soldier's fatigues. It offers a built-in Global Posi-

tioning System, Rex Zenger, senior vice president at Texas Microsystems, said the Houston company will bring a commercial version of the heavily ruggedized product to market within the next year.

The product will cost \$3,000 in that version and will be targeted at vertical markets.

"We see opportunities for data collection applications, digital imaging, insurance adjusting and all those sorts of things, but we also think it'll be useful to people like police officers," Zenger said.

Still, it is not clear whether Texas Microsystems' highest potential customer, the U.S. Army, will use the Soldier's Computer.

The Army is not looking for mainstream procurement until 1999, and that date depends on other research projects such as virtual displays.



Texas Microsystems' Soldier's Computer is designed to fit in the thigh pocket of a soldier's fatigues.

AST expands desktop lines

By Jaikumar Vijayan

In what analysts view as a bid to plug a gaping hole in its desktop product line, AST Research, Inc. recently introduced a midrange PC to its Bravo line even as it replaced its Premia LX with a high-end desktop offering.

Both the Bravo MS and Premia MX systems, which began shipping this month, are available with a variety of processor options, ranging from an Intel Core 486 to a 100-MHz Pentium. They feature 64-bit Peripheral Component Interconnect local bus graphics, Plug and Play capabilities and a Desktop Management Interface.

The AST announcement may have come not a moment too soon, at least as far as one large AST user was concerned.

"Frankly, we have been rather disappointed with AST over the last one year or so," said Douglas Murphy, director of management systems at Comcast Corp. in Philadelphia. "They have not kept up with Compaq, Dell or IBM."

While he welcomed AST's new product offerings, Murphy maintained that the company would have its work out to convince customers such as himself to continue with AST as a vendor.

"AST was a viable contender with reliable products offering good price/perfor-

mance. Now they are playing catch-up, and they have to prove why their products are different before I swing any more of my dollars their way," Murphy said.

AST hopes to induce more customers to do this by delineating its business products into four categories and fleshing out its offerings with its new, aggressively priced midrange PC, according to a company spokesman.

"We play very well in the high end and the entry level, but there was a hole in the midrange where we didn't have any offering. The new Bravo MS plugs that hole," the spokesman said.

Analysts agreed that the Bravo MS addresses a growing customer need for mid-range corporate desktops.

AST "had nothing in the midrange, and as far as AST customers were concerned, it was a hole that needed to be filled," said Joseph Munson, an analyst at Work-

Group Technologies, Inc. in Hampton, N.H.

The Bravo MS is AST's top offering in the line of value desktops and joins existing Bravo LC, LP and LT models. The high-end Premia LX model, which comes with a 64-bit graphics card and up to 750M bytes of memory, are targeted at the computer-aided design and manufacturing markets, according to AST.

Price comparison	
The Bravo MS 64-bit with 32M bytes of memory, a 4.2GB-byte hard drive, 34M byte of video RAM and a dual-speed CD-ROM will cost about \$2,300. A similarly configured Premia MX 486-based on an Intel 486DX4 with a 25.6M-byte cache will cost roughly \$3,000.	

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"Everyone wants notebooks, everyone wants desktops, everyone's giving me grief, but no one's giving me the money to buy both."

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Desktop Computing

Iges Data Analysis, Inc. has announced Calview for Microsoft Corp.'s Windows and Windows NT, graphics viewing and redlining software.

According to the Melrose Park, Ill. company, Calview for Windows also provides geometric measurement and format conversion for two- and three-dimensional computer-aided designs and metafile, vector and raster formats.

Users can control the display of levels, layers, entity visibility and style.

An application programming interface is provided for integration with data management systems.

Prices start at \$595.

► **Iges Data Analysis**
(708) 344-1815

Pathom Technologies has introduced Portable, a portable tape drive that enables midrange computers to back up both midrange systems and PCs.

According to the Longmont, Colo. firm, Portable backs up PCs using IBM tape commands on System/36, AS/400 and Portable software.

The product comes in two versions: a 16-byte, Vain tape model for System/36 users and a 100-byte, 8mm tape model for AS/400 users.

Prices range from \$3,995 to \$5,895.

► **Pathom Technologies**
(303) 678-7870

The **BCB Technology Group, Inc.** has announced Dart-Assist, a handheld PC-based digital voice recorder.

According to the Woodbridge, Ontario, company, Dart-Assist creates digital voice files when plugged into the serial port of a PC, laptop or notebook.

The product digitally records dictation and compresses and stores voice messages and data on stand-alone or networked PCs.

Dart-Assist costs \$399.

► **The BCB Technology Group**
(905) 850-8205

Accent Solutions, Inc. has introduced Pzip Mac, a data compression utility for the Macintosh.

According to the Dayton, Ohio, company, Pzip Mac uses a deflation algorithm to compress most data by 50% to 90%, letting users transfer files quickly.

The product includes user-selectable high-speed or high-compression operations. Macintosh-specific information is compressed separately from general information.

Pzip Mac can store up to 16,383 files in one archive. It costs \$55.

► **Accent Solutions**
(612) 885-3981

Tatung Co. of America has announced Audio 15, a 15-in. flat-square stereo multimedia monitor with built-in speakers.

According to the Long Beach, Calif., company, Audio 15 features two built-in speakers, a digital control panel and Energy Start compliance.

The monitor has a 25mm dot pitch, 100% by 768-pixel monitor interface resolution and a 75-MHz vertical refresh rate.

Audio 15 costs \$499.

► **Tatung**
(212) 879-7055

NeofRad Corp. has introduced Jitterbox, an electromagnetic shielding product. According to the Carzon, Calif., company, JitterBox eliminates image jitter and distortion on computer monitors and video displays caused by background magnetic field interference with the monitor's internal fields.

JitterBox attracts and absorbs external magnetic fields so the monitor image remains stable.

Prices range from \$395 to \$585.

► **NeofRad**
(310) 605-0888

Ultralink, Inc. has announced Ultralink Model 120, a slotless ISA bus expander.

According to the Mission, Tex. firm, Ultralink Model 120 consists of a single PC card and cable that connect a passive ISA backplane to a PC's parallel printer port, allowing the use of data acquisition, control and peripheral I/O cards without internal expansion slots.

Ultralink Model 120 expands address space and interrupt levels available on the expansion backplane. Both 8- and 16-bit ISA I/O data transfers are supported.

The Ultralink Model 120 costs \$159.

► **Ultralink**
(708) 782-9753

PastTrax International has announced PastTrax 5.0, disk optimizing software.

According to the Berkeley, Calif., company, PastTrax 5.0 defragments any size hard disk with no limits on the number of files and directories, and it works 30% faster than the previous release.

The product tests and repairs disk surfaces, sorts directories using multiple sort keys and creates free space for Windows swap files and compressed drives. A Map Inspection feature reveals which files are fragmented and which clusters are causing fragmentation.

A Make Trax utility lets users view and change file placement and priorities.

PastTrax 5.0 costs \$70.

► **PastTrax**
(510) 625-3310

Creative Labs, Inc. has announced the Video Blaster HT300, a video capture card.

According to the Milpitas, Calif., company, the HT300 features real-time capture and compression of analog video for use in CD-ROM publications, presentations, training materials and desktop video.

The HT300, based on Intel Corp.'s 82750E video processor and Indeo technology, digitizes and compresses video data at 30 frames/sec. Other features include capture of full-screen/still images and support for multiple video sources and standards.

The Video Blaster HT300 costs \$499 and comes bundled with Adobe, Inc.'s Adobe Premier, digital video-editing

software.

► **Creative Labs**
(408) 426-6000

Dolch Computer Systems has announced TelePac, a portable video teleconferencing platform.

According to the Milpitas, Calif., company, TelePac was designed for systems integrators and high-end business users and includes an adjustable video camera, a high-fidelity sound system and expansion capacity for integrating modems.

TelePac is ruggedized and includes shock mounting of the display and all prices in board.

Prices start at \$4,500.

► **Dolch Computer Systems**
(408) 957-5575

The WizardWorks Group has announced the Notebook Companion, a collection of software applications designed for the notebook computer.

According to the Minneapolis company, Notebook Companion includes an Information Security System, Battery WatchPro for DOS/Windows, Schedule Works for Windows, Expense Wis for Windows and Notebook Game Pack for Windows.

The applications feature access control, virus protection, memory checking, battery level checks, calendar schedul-

ing and printing and expense reporting. The Notebook Companion costs \$59.

► **The WizardWorks Group**
(612) 558-5140

Product shorts

CalCom Products has introduced the 29432C, a VPlot 28-MHz bit/sec, external data/fax modem. The product includes a high-speed serial card with two ports, interrupt request settings and support for communications port levels 1 through 8. Cost: \$248. CalCom Products, Pleasanton, Calif. (714) 961-1888. ... **Number Nine Computer Corp.** has introduced FlashPoint, a family of graphics accelerators. The products come in 32- and 64-bit configurations and are powered by Cirrus Logic's GD5434 bit processor with an integrated true color palette. Cost: \$179 to \$248. Number Nine Computer, Lexington, Mass. (617) 674-0009. ... **Dataproductions** has announced Typhoon 60, a 99 pages/min. laser printer. Typhoon 60 was designed for high-volume, uninterrupted printing. It comes with 42 PostScript fonts, 20 PCL5 fonts and an on-line library of font sets. The product can simultaneously emulate up to 64 virtual printers, each configurable for a specific individual or workgroup. Toner can be added during printing. Cost: \$80,000. Dataproductions, Woodland Hills, Calif. (818) 897-8000.

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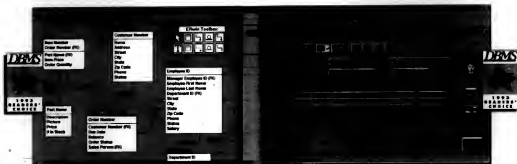
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 - 80 Manufacturing/Construction/Healthcare/Agriculture
 - 90 Manufacturer of Computers, Computer Peripherals Systems or Peripherals
 - 00 Systems Integrators, VARs, Computer Service, Business, Software Planning & Consulting Services
 - 01 Computer/Peripherals Dealer/Reseller
 - 02 Other _____ (Please Specify)

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 - (d) Unix
 - (e) Development Products
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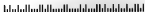
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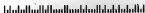
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Workgroup Computing

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Tricord aims low in superserver market

By Jalkumar Vijayan

As in a major step out of its traditional market, superserver vendor Tricord Systems, Inc. recently announced a new departmental server series aimed at the under-\$55,000 market.

Tricord's announcement, which puts it directly in the turf of vendors such as Compaq Computer Corp. and AST Research, Inc., includes three Pentium-based models: the DS1500 and DS1600, slated for delivery this month, and the DS800, scheduled for fourth-quarter delivery.

Mark Garver, Tricord's vice president of corporate strategy and marketing, said the server family positions Tricord favorably in the \$8,000 to \$15,000 segment of the superserver market.

"We use a growing need from users for high availability and fault-tolerant features in this price range," he said.

The systems, which are available in dual-processor configurations, include features such as error-correcting code memory, RAID

support, hot replaceable disk drives and secure booting capabilities. Both the DS1500 and the DS1600 will also come with redundant power supplies.

"Anybody who intends to use these Tricord boxes as a Unix server will jump on it," said John Williams, MIS manager at Priority Pharmacy in San Diego. Williams said until symmetrical multiprocessor-enabled versions of Novell, Inc.'s NetWare are available, Tricord's new servers would be best suited for Unix environments that fully exploit their dual-processor capabilities. Williams uses a Tricord ES4000 enterprise server to run a pharmacy database.

Good response

Other users welcomed Tricord's entry into the small server arena.

"From a technology standpoint, it's a good thing that a company like Tricord has decided to enter the departmental server market," said Sharna Gilbert, assistant manager of MIS at CardService International in Laguna Hills, Calif.

"If we were a small company and Tricord, p. 48

Users seek net models

By Steve Moore

End users angry about ill-planned changes to mission-critical networks and corporate executives intent on cutting the cost of all network changes are driving network managers to invest in network modeling tools. Such software

tools are available today, but choosing one is a complex matter.

By using software to construct and compare graphical models of what-if networking scenarios, users can make informed decisions about network changes and assess the impact of those changes before they implement them.

"I needed a tool to allow me to examine our capacity planning for our existing network, as well as to design and implement the expansion we were undergoing," said Don Bricker, a network administrator at Methodist Hospital in Port Worth, Texas, and a beta user of IBM's recently announced Network Performance Modeler for OS/2, also called NetModeler.

The hospital is moving toward client/server applications and expanding its Novell, Inc. network from five to more than 30 file servers. Bricker said. The hospital's network also in-

cludes 50 OS/2 workstations, several RS/6000 computers and an increasing number of Sun Microsystems, Inc. workstations.

Historically, most users have "thrown out" networks together by the seat of their pants based on blind faith in vendors' promises about the performance of their network hardware and software, said Harrell

Vin Norman, a senior communications engineer for the U.S. Department of Energy and author of the book *LAN/WAN Optimization Techniques*.

Although network modeling tools can make network planning more of a science than a black art, most of these tools require

extensive technical expertise for proper use. They may not reduce a company's requirement for network engineers, Vin Norman said, but modeling tools can help companies avoid overbuilding or underbuilding their networks — mistakes that are disruptive and expensive to rectify.

Some modeling tools are appropriate for static analysis of smaller departmental LANs. Others can run actual event-driven simulations of global voice and data networks, taking into Net models, page 48

Agents step to fore

By Lynda Radosevich

While advances in software agent technology may not solve the entire information overload problem, software agents can help improve the quality of information sent to users.

There are two central kinds of filtering agents and many different degrees of sophistication, analysts said. Simple personal agents that sort and forward electronic mail based on the sender or on keywords already exist in E-mail packages such as Lotus Development Corp.'s CC-Mail and Banyan Systems, Inc.'s BeyondMail.

At GroupWare '94 earlier this month in San Jose, Calif., vendors demonstrated more sophisticated agents that can scan data sources such as on-line services and corporate databases for context and meaning, not just keywords. Also, the agents can initiate a workflow process based on certain triggers, such as an E-mail message or an addition to a database.

Conference attendees said they

were most interested in this kind of agent technology in order to get information from their competitors.

Verity, Inc. in Mountain View, Calif., best known for its document-search engine, has a kit that lets developers build context-sensitive agents into workflow applications. To that end, Sarcos Corp., PC Doss, Inc. and Jetson Technologies, Inc. announced recently that they will use Verity's agent

technology in their document management and workflow products, which will be available in early 1995.

Verity also said it will ship early next year add-on software for Notes and the World Wide Web that will allow users to search and retrieve information based on contextual rules they set up.

Sandfish, Inc. in Cambridge, Mass., said it added "American Banker" to the list of periodicals that its information agents can scan in order to develop information in Notes.

Reporter's

Notebook

The following are some items of interest from the GroupWare '94 show held recently in San Jose, Calif.:

At a vendor face-off, executives from Lotus, Microsoft and the WordPerfect division of Novell sparred over opposing object standards that ultimately will be a pain for end users who will have to worry about interoperability. Lotus Vice President Jeff Papows leaned on Microsoft's Tom Evidal, general manager of business server applications, to get Microsoft to extend Object Linking and Embedding (OLE) integration

technology to DOS, OS/2, Unix and other platforms.

The problem is that vendors such as Lotus will have to support two object linking standards, OLE and OpenDoc, the multiplatform scheme from Component Integration Laboratories. OLE and OpenDoc have different architectures, and interoperability will never be good. Papows said. To address this, Evidal indicated that Microsoft may port OLE to Unix.

Meanwhile, session moderator Amy Wohl, president of Wohl Associates, predicted that two more vendors will soon become powerful

in groupware: Oracle with its database-driven groupware and Computer Associates with groupware systems management.

WordPerfect announced its first major reorganization since it was purchased by Novell. A new division called Novell GroupWare will be located at WordPerfect's Orem, Utah, headquarters. Ken Duncan, former CEO of SoftSolutions, was named vice president and general manager of the division. Bob Young, formerly a Novell Network consultant, is the vice president of marketing, and Stuart Nelson, former vice president at WordPerfect, is the vice president of research and development. The division's products include GroupWare (formerly WP Office), InForms and SoftSolutions, with more to come through acquisitions, a spokesman hinted. Still a neighbor is where Novell's Message Handling Service division will land.

For users interested in migrating to a messaging server that is not yet shipping commercially, Microsoft has a newer. Company spokesmen demonstrated utilities that can move user names and mailboxes and scheduling information from Outlook to Microsoft's Mail for AppleTalk, Lotus CC-Mail and others to the forthcoming Microsoft Exchange server. The utilities are shipping to many large Exchange beta sites. Exchange still has no delivery date, but officials said it should ship commercially in the first half of 1995.

GroupWare '94

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Shaping Technology

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Net models

CONTINUED FROM PAGE 45

account queuing behavior and end-to-end response times. Van Norman advised users to be aware of the difference between basic analytical modeling that takes a snapshot of network utilization and actual simulation that dynamically models a network's behavior over time.

Users must determine whether they need a high-end dynamic simulation tool such as CACI Products Co.'s Connet III, a high-end analytical modeling tool such as Make Systems, Inc.'s NetMaker XA or a more narrowly focused product such as IBM's NetModeler.

Bricker said he considered Connet III, but "it was too expensive to justify since we don't have a lot of WAN links, and that seemed to be its strength." He added that his only criticism of NetModeler was that "the beta products have been lacking in the underlying base workstations to model." He noted that while IBM provided the tools to build these models, he would prefer to have them built into the product.

Warning is better

IBM's entry into the network design/modeling tool market is a sign of the growing importance of analyzing proposed new networks and changes to existing networks before implementation. NetModeler is intended primarily for

SNA or combined SNA-TCP/IP networks, said John Morency, principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass. For example, NetModeler would be useful to "users who want to analyze how to best combine an SNA environment with a TCP/IP networking environment," he said.

"One of the nice things we're doing is that we set up a CompuServe forum [on NetModeler] so we can share models with other users," Bricker noted. "If I

build a Sna workstation model and someone else does an RS/6000 model, we can share them and save quite a bit of labor."

In the future, Van Norman said, network modeling tools will likely be tightly integrated with enterprise network management systems such as Hewlett-Packard Co.'s OpenView and IBM's NetView, as well as with remote network monitoring probes.

And because some modeling tools use device libraries that closely mimic the

behavior of specific vendors' products, they could be used "to compare and contrast vendor A to vendor B," he said.

"We've never used a modeling tool for laying out our network, but it's probably a good idea for us to do something like that," said Matt Fahrner, a senior network analyst at Burlington Coat Factory Warehouse Corp. in Lebanon, N.H. "You think you've got it all covered, but then you're always surprised by what the end user will throw at you."

Tricord

CONTINUED FROM PAGE 45

we wanted major redundancy and fault tolerance," a server like the one Tricord announced would provide an adequate entry point he said, citing Plug and Play, flexibility of operating system support and level of redundancy as key factors for purchase decisions in this market.

Tricord's entry into the small server market coincides with an agreement with Fore Systems, Inc. in Pittsburgh in the area of Asynchronous Transfer Mode (ATM) communications technology. Under this agreement Tricord and Fore will integrate multiple ATM ports inside Tricord's enterprise servers.

Users said they liked the idea of integrated ATM functionality, but the technology was still far too nascent to really interest them.

"ATM is kind of out there right now.... There is not much out in terms of standards and hardware," said Gilbert, who indicated he will continue to use Fiber Distributed Data Interface and Ethernet switching technologies until ATM becomes widely available.

Fore Systems' ATM technology, which the firm claims is fully compliant with ATM Forum specifications, provides transparent software support for existing workstation and PC operating systems. ATM products from the company include the ForeTran ATM switch family, LAN access cards and network cards.



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Lannet builds LAN bridge, unveils FDDI products

By Stephen P. Klett Jr.

Lannet Data Communications Ltd. recently spun off a start-up company that will develop wireless data communications products for local-area and enterprise networks.

In conjunction with its unveiling, Lannet Ltd., which is based in Tel Aviv, Isra-

el, launched its first product—a remote wireless Ethernet LAN bridge. The bridge was designed to connect remote LANs in campuses and metropolitan centers where installing physical cable may be impossible, difficult or costly.

According to Lannet, EthAirBridge is the first product to extend wireless bridging between Ethernet networks to

a range of 15 miles. The bridge has a full-duplex data throughput rate of 76.8K bit/sec., which is comparable to traditional 64K bit/sec. leased-line connections such as fractional T1. However, an optional 4-to-1 data compression board can boost throughput to more than 300K bit/sec.

"From a technical perspective, this ap-

pears to be real good product. The question is the potential market for it," said Chip Petrosini, an analyst at International Data Corp. in Framingham, Mass. "The general purpose commercial market has not yet evolved."

EthAirBridge uses 2.4-GHz frequency-hopping, spread-spectrum radio technology, which was originally developed for military applications. Spread spectrum disperses

data packets over a range of frequencies, making it impossible for listeners at any single frequency to access the data, Lannet said.

"This product sounds secure enough that it could hold a lot of promise for connecting some of our outlying branches as well as some isolated LANs in our main buildings," said a network manager at a large Midwest bank who asked not to be named.

EthAirBridge is available now for \$6,900. The optional compression board costs \$1,000. Lannet, Inc., a subsidiary of Lannet Ltd. in Irvine, Calif., will sell and distribute the product in the U.S.

FDDI lineup

In a separate announcement, Lannet, Inc. unveiled the following three Fiber Distributed Data Interface (FDDI) modules for its MultiNet line of intelligent hubs:

- **Integrated Ethernet to FDDI Router module:** Provides concurrent routing and bridging between all four Ethernet buses on the backplane of the MultiNet hub and an external 100M bit/sec. FDDI ring. The \$17,995 module has a total of four Ethernet and two FDDI interfaces and is Simple Network Management Protocol (SNMP) manageable.

- **FDDI-over-copper concentrator:** The \$2,495 L2D-104/12 module provides a 100M bit/sec. connection to servers or workstations.

- **SNMP agent:** The \$4,995 NMA-FD Network Management module configures, controls and provides real-time performance statistics on primary and secondary FDDI rings as well as Ethernet, Token Ring and LocalTalk networks.

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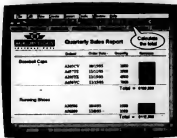
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Workgroup Computing

Auspex Systems, Inc. has announced the NS 7000 NetServer family of Unix Network File System servers.

According to the Santa Clara, Calif., company, the servers can host up to 300 users running software development, inventory management, document management, financial analysis and multimedia applications.

The servers' Functional Multiprocessing architecture eliminates I/O bottlenecks and dedicates processors for network, file and storage processing.

Prices start at \$60,000.

► **Auspex Systems**
(408) 998-2000

STS Systems, Inc. has announced SmartLook, Windows-based software that provides access to legacy data.

According to the Pointe-Claire, Quebec, company, SmartLook lets users view and manipulate reports from mainframe and other legacy systems on their PCs, using a graphical user interface.

Features include customized templates for each report, automatic indexing of data each time a report is downloaded from the mainframe and three options for viewing reports. Reports can be reviewed by page, section or custom spreadsheet.

SmartLook costs \$995.

► **STS Systems**
(514) 426-0822

Personics Corp. has announced Monarch for Windows, a report viewer and data access system.

According to the Wilmington, Mass., company, Monarch for Windows lets users view, query, print, analyze and extract reports from any mainframe, midrange system or PC. Files can be accessed across a network via terminal emulation software or transferred on diskette.

Monarch for Windows costs \$490 for a single user. Prices start at \$2,000 for a network license of eight users.

► **Personics**
(508) 655-0049

Thoroughbred Software International, Inc. has announced Gateway to Windows 3.16.

According to the Somerset, N.J., firm, Gateway to Windows 3.16 provides transparent communication between Unix-based Business Basic/4GL applications and Windows. Users can display spreadsheets intermixed with Unix information, retrieve and display workstation-based graphics and access all host-based Business Basic or fourth-

generation language files.

Prices range from \$700 to \$14,000.

► **Thoroughbred Software**
(908) 560-1377

Cleo Communications has announced Linkix APPC/CPI-C, a Unix-to-SNA connectivity product.

According to the Ann Arbor, Mich., company, Linkix APPC/CPI-C includes full implementation of IBM's Advanced Program-to-Program Communications

(APPC) and Common Programming Interface for Communications (CPI-C), each of which supports Advanced Peer-to-Peer Networking.

The product lets transaction programs running on one system communicate directly with transaction programs on the same or a different system, without going through the host.

Prices start at \$1,995.

► **Cleo Communications**
(313) 982-2666

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Enterprise Networking

**TCP/IP DILEMMA IN
VENDOR SIGHTS, 59**
**HOSPITAL CENTRALIZES
RECORDS, 63**

Support seldom follows as U.S. products go east

By Steve Meyers

From the perspective of Sudhir Rahman, a senior network engineer at DTHL International in Singapore, U.S. computer vendors need to get the American stars out of their eyes and align themselves with local constellations.

Raghaman said U.S. vendors provide specialty technical support in the Pacific Rim and Asia and tend to be "very focused on ideal environments with high-speed [wide-area network] links."

Level of technology

In a region where only the five or six largest countries have sophisticated telecommunications infrastructures, a company such as DII must write many of its own network applications and cannot "throw routers at the problem," Rahman noted. What U.S. vendors forget, he added, is that many Pacific Rim users still rely on 9.6K bit/sec. circuits and X.25 networks.

Rahman said specific routers, for example, may not be approved for use by regulatory authorities in some countries. Even if approved, they are often not suited for use in areas where circuits are unreliable, and X.25 remains the dominant protocol.

Jeff Kaplan, a director at Dataquest, Inc.'s Worldwide Services Group in Framingham, Mass., counseled users to carefully evaluate the "mosaic of strategic service alliances" that even the largest vendors are assembling because "they don't have the wherewithal to deliver uniform support in every region of the world."

Only the big guys

Fahman said Hewlett-Packard Co. provides limited local support in many of the 28 Pacific Rim countries that DHL's network spans but none in Bangladesh, for example. So he restricts use of HP's OpenView to the six largest countries. Even then, he added, he often runs

Support, page 62

Update delays cost Banyan

Overall success continues, but some users let go of Vines

By Elisabeth Horwitz

■ Banyan Systems, Inc.'s recent introduction of long-awaited network service and administration features is happening just a bit too late to discourage one customer from jumping off the Vines platform to Novell, Inc.'s NetWare 4.n.2. Another corporate user is threatening to leave for Microsoft Corp.'s Windows NT.

Overall, Banyan has been increasingly successful in winning large corporate accounts to its Enterprise Network Service strategy [CW, Aug. 1]. The Westboro, Mass., company made 49% of all network operating system shipments to sites of 50 users or more last year, according to Dataquest Inc.

On the downside, a number of Banyan users have been frustrated with delays in the shipment of promised key features, notably a Windows-based graphical user interface (GUI) for Vines administration tools.

Banyan just announced its Windows-based GUI for Vines administration and plans to provide another key feature, fail-safe login, in the next Vines release, due early next year, said company spokesman Bill Johnson.

Making the move

For W. J. Schaefer Co., however, it is already too late. The firm is now in the process of converting its five servers from Vines to NetWare 4.01, with a 4.02 upgrade to follow shortly, said Bernard Del Llano, a network specialist at the Chelmsford, Mass., research and development company.

W. J. Schafer decided on the move last year based on some product gaps and some in-house comparisons of the products. Del Lino's group drew the following conclusions:

■ **Banyan's Intelligent Messaging Service** did not perform as well as Novell's Message Handling System in supporting Microsoft's Mail, which is W.J. Schafer's messaging front end. "We did benchmarks for NetWare 4.x vs. Vines in terms of accessing AT&T's Easylink service and an MS Mail server," Del Llano said. "Executing an icon took three or four seconds longer for Vines than for NetWare on comparable servers."

- Vines did not have Macintosh support at the time.
- Novell seemed a more viable network operating system supplier, based on market share, and had broader third-party support.
- Installing a Vines server took about two hours and 45 minutes, compared with 25 minutes for

a NetWare 4.x server. It also took about half as long to boot up a NetWare server with at least 500K bytes of disk space as it did a similar Vines server.

- Novell's Windows-based NWAdmin seemed superior to Banyan's administration tools.
- Banyan did not provide direct call-in support. Until recently, "you always had to go through a reseller," Del Llano said.

Up for grabs

A Banyan product manager is scheduled to meet with Dow/Brands network analyst David Day later this month in an effort to persuade him not to move from Vines to NT. A former NetWare LAN administrator, Day said he was originally impressed with Banyan when he took over Dow/Brands' Vines installation.

In particular, Day said he liked Banyan's tools for developing small Windows applications to perform basic administrative work such as adding user accounts and moving users around the network.

More than a year later, however, Tully said he is more aware of the drawbacks and gaps in Vines. He said he has been waiting impatiently both for a Windows-based LAN administration tool set and a fail-safe log-in feature.

Day was most vocal about Bunzany's new tiered-pricing structure, introduced in the spring. DowBranda is likely to pay \$25,000 per year for four 250-user server licenses; formerly it paid \$10,000 per year for unlimited site licenses, he said. The problem is that Bunzany has nothing to offer in between 100-user and 250-user licenses, and DowBranda has 600 users on four servers. Moreover, the company cannot guarantee that any one server will never have more than 100 users, Day said.

Viable solution?

Johnson said DowBrands can get around this problem by purchasing two 250-user licenses and two 50-user licenses. The licenses "restrict only the number of users who can log-on to a given server; once a user is logged on, access to any service on any of the servers is unrestricted," he said.

Day said this scenario will not work because he has configured each server as a separate domain that provides the majority of file and application resources for a particular set of users. This minimizes network traffic and makes it much easier to update user accounts to reflect moves and changes in network resources, he said.

Banyan now hopes to move to a true enterprise-wide licensing structure by next year, Johnson said, but Day said that time frame sounded unrealistic.



Coming out on top

Banyan's Vines tied or beat Novell's NetWare and Microsoft's NT Advanced Server in the areas of ease of configuration, ease of security management and ease of installation in a recent Buyers' Scorecard survey... Vines led both in all three areas with the exception of ease of installation, where NT Advanced Server matched Vines 5.5's score of 7.5, (on a scale of 1 to 10). The survey was conducted prior to

announcement this month of a Windows-based administration system for Vines.

roulets to reflect moves and changes in network resources, he said.

Digital Communications Associates, Inc. has announced the Remote LAN Node (RLN) Application Server software for Novell, Inc. networks.

According to the Alpharetta, Ga., company, the RLN Application Server simultaneously manages up to 16 remote nodes per server when attached to a network by emulating a network interface card at the remote PC.

The product, when combined with the company's Remote LAN Node, lets users access LAN-based, file-intensive applications. The RLN Application Server uses Citrix Systems, Inc.'s WinView for Networks technology to provide remote access to applications that require high bandwidth.

The RLN Application Server costs \$2,950 for a 10-user base system.

► **Digital Communications Associates**
(404) 442-4000

Saber Software Corp. has announced Saber Server Manager, a network performance management product.

According to the Dallas company, Saber Server Manager was designed to work with NetWare 3.1x and provides tracking, configuring and performance optimization for enterprise-wide file servers.

A network manager can track and tune more than 60 internal NetWare parameters and offers the option to review and adjust real-time data or analyze historical server information.

The product lets users configure the server to match the needs of a specific application.

Saber Server Manager costs \$600 per server.

► **Saber Software**
(214) 261-8606

TyLink Corp. has announced TyView/SNMP, Simple Network Management Protocol (SNMP)-based software for controlling high-speed digital access devices.

According to the Norton, Mass., company, TyView/SNMP provides centralized management of large, geographically dispersed digital networks that use public or private fractional T1, T1 or E1 services. It also automates troubleshooting and problem repair.

TyView/SNMP reduces network congestion by eliminating SNMP polling from the local- and wide-area internet-work.

Features include real-time reporting, user-friendly diagnostics and a bit-error rate test.

Prices range from \$1,995 to \$17,495, depending on network size.

► **TyLink**
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Radcom Equipment, Inc. has announced the RC-300-C, an Asynchronous Transfer Mode (ATM) protocol analyzer.

According to the Mahwah, N.J., firm, the RC-300-C lets users test various opti-

cal and coaxial interfaces with a single unit by switching interface cards.

The system is made up of a BISC-based external unit with dual ATM segmentation and reassembly processors. The unit connects to any notebook or PC and is controlled by Windows-based application software.

The product can be used to simultaneously generate and monitor traffic, including physical and data link errors. Other tasks include ATM adaptation

layers 3, 4 and 5 transmission and reception, statistics, decoding and analysis.

Prices start at \$15,000
► **Radcom Equipment**
(201) 529-1100

Advanced Software Concepts has announced NetArchive-Distributed Network Backup, an enterprise-wide backup and recovery system.

According to the Escondido, Calif.,

company, NetArchive-Distributed Network Backup backs up critical data from any or all computers in the network and stores the data in one central storage device or several devices distributed throughout the network.

Backup files are managed by the company's NetArchive-Storage Vault Manager software.

Prices start at \$2,000.

► **Advanced Software Concepts**
(619) 737-8544

d r e A m

27

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Company targets DECnet migration dilemma

By Mary Harradot

Hoping to ease the pain of TCP/IP migration for DECnet users, TGV, Inc., a \$20 million leader in the TCP/IP market, will announce Phase/IP this week. The product allows customers to retain their familiar Digital Equipment Corp. DECnet applications and commands while trans-

porting data natively over TCP/IP.

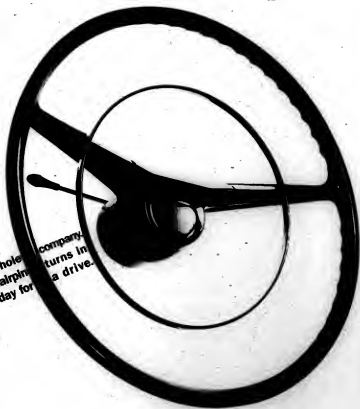
"That would be very powerful," said Jim Brown, research associate at the University of Miami, when he heard about the product. The university still uses DECnet, but TCP/IP allows VAXs to access non-Digital systems.

"I have a number of VMS systems that I can only access through TCP/IP, but all I

can do is send files. I don't have the level of integration that I desire," Brown said. "This would give that to me."

Most Digital customers are seeking to replace DECnet with TCP/IP over time, said Jim Harrison, vice president of global networking strategies at Meta Group, Inc. in Reston, Va. "The majority see DECnet as a dying protocol," he said.

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steer my whole company turns in a nice day for a drive.

Common ground

Here and there, migration systems users will look to TCP/IP as a common protocol across heterogeneous environments.

PERCENT OF MANUFACTURERS ATTRIBUTED TO TCP/IP	
1994	35%
1995*	40.1%
1996*	46.3%

*Projected

Source: International Data Corp., Framingham, Mass.

But most of the migrators will run both protocols side by side, only gradually weaning off DECnet. There is a "significant advantage" to allowing different command sets to exist during that coexistence phase, Harrison said.

Mary Ellen Fortice, marketing manager at Digital, denied that customers were mass-migrating away from DECnet. She claimed that more than half the DECnet installed base has already moved or is moving to DECnet/OSI, the latest version.

TCP/IP is big at Schlumberger Industries, Inc. in Sugar Land, Texas, which uses the protocol stack as the basis for an extensive international private corporate data network. But pockets of DECnet remain from the 1980s when Schlumberger was one of Digital's largest customers. It will be two to three years before it disappears.

Phase/IP will "allow people who know and love the DECnet interface the option of retaining those," said David Sims, director at Sines, the information network at Schlumberger. In addition, custom applications written for DECnet will not have to be changed.

In the latest version of DECnet, introduced last December, Digital chose to support the Open Systems Interconnect (OSI) stack, but "our stated direction when we announced DECnet/OSI was to provide a variety of transports," Fortice said.

In fact, Digital plans to ship software next spring that will enable users to access DECnet applications over TCP/IP. Currently, DECnet/OSI customers must use application gateways to share information across transports.

There is a catch to Phase/IP — it runs only on top of TGV's Multinet TCP/IP software, not with other vendors' TCP/IP software. Digital said its upcoming software is intended to run with multiple vendors' TCP/IP software.

Phase/IP costs from \$300 to \$7,000. Multinet costs from \$12,000 to \$24,000.

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So your question isn't whether to explore client/server, it's what to look for in the people who help you, and here's a suggestion. If they don't have a long list of references in multiplatform, multivendor integration and if they don't have solid knowledge of your kind of business, call someone who has. Someone like IBM.

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Hospital goes paperless

Central database will ease access, reduce overlap

By Saravethi Mohan

The Methodist Hospital in Indianapolis is setting up a Patient Electronic Medical Record system that will store all patient records in a central database — doing away with the paper that has been needed until now.

The project, to be rolled out in three phases starting in October, will eventually give departments access to all patient information instead of requiring each department to collect its own. This will eliminate a major duplication of effort.

Additionally, the project will allow remote sites to access the patient data, according to Bill French, director of medical information management at Methodist Hospital.

Although not willing to disclose cost specifics, French said he expects the project to require the hospital to physically pull 25% fewer charts than it has in previous years. "I expect it to increase as time goes on," he added.

All in one

The system will require all departments at the hospital to send patient information to a Sybase, Inc. database running on a Sun Microsystems, Inc. server, explained M. N. Sabesan, director of systems integration at the hospital. The server will initially support 50 workstations.

With a Windows front end in a 66-MHz 486-based workstation, doctors will be able to view any information they need on a particular patient instead of having to login to different servers in various departments.

An important component of the system will be the admissions data, currently collected on a mainframe. Eventually, the mainframe will be tied into the Sun server so the admissions information will be integrated with the rest of the patient data. The mainframe, which otherwise functions independently of the Sybase database, uses the admissions data to put together a patient's financial information.

In the meantime, the mainframe will send patient registration data to the relevant departments, where it will be printed out. Most departments will still have to manually input the information into the departmental system, though some will receive electronic updates.

System insecurity

Although the central repository will require the user's name and password, there will clearly be a need for more security features, according to Sabesan, who will start working on restricting ac-

cess once the system is rolled out. Before he tries to tighten security, however, Sabesan will need feedback from physicians on what constitutes a critical data element.

Sabesan said it is hard for him to predict the problems he will face once the system is up and running. The speed and robustness of the network, training physicians and finding support people are among the issues he anticipates dealing with, he said. "When we roll out 1,000 workstations and [include] remote sites, support will be a crucial issue," Sabesan said.

Even though remote sites will not be able to dial into the database in the initial rollout, the hospital has connected 11



Methodist Hospital's M. N. Sabesan (left) and Tim Spears are trying to replace paper records with electronic records.

suburban clinics to its main network, according to Steve Neal, director of telecommunications at the hospital. At the center of this network is a collapsed backbone composed of three WorldTel Communications, Inc. routers with spokes reaching into the different departments and T1 lines linking the remote sites.

Network smorgasbord

The nodes on the network are an eclectic mix of mainframes, IBM AS/400s, Unix boxes and PCs. Mixed TCP/IP and SNA network traffic is allowed to communicate through Aputer Technologies, Inc.'s DataStar hub.

The remote sites can move images to and from the hospital. With digital tele-radiology, a patient's magnetic resonance images and CAT scans can be sent over a T1 line, with analog tele-radiology, a patient's ultrasound can be sent over a fiber-optic line. This will allow a technician at a remote site to get a doctor's advice from a distance.

Various departments are reaping the fruits of the system as well. "We had been limited in providing lab services to remote sites because we didn't have connectivity and had to use modems," said Tim Spears, system manager of lab information systems in the pathology department. "So we [always] ended up using paper."

Briefs

Proginet to ship file transfer

Proginet Corp. in Uniondale, N.Y., has acquired a Novell, Inc. PC-to-mainframe file transfer product based on the IBM SNA-based INDRFile protocol. The company plans to release a series of enhancements to the file-transfer product. The first, scheduled for shipment Sept. 1, is called INDRFile Plus 3.0 Advanced Feature Pack. It will include improved file-transfer performance through data compression, security, an audit trail, reduced CPU utilization and batch job submission from PCs.

Novell combines sales team

Novell, Inc. recently announced the formation of the Novell Applications Group subsidiary, a worldwide sales organization comprising the sales teams of Novell and the recently acquired WordPerfect Corp. The combined force will consist of more than 1,800 people worldwide, Novell said. Separately, the company announced it has added support for DR DOS 6.0 and its enhanced version of the operating system, Novell DOS 7, through its Novell Authorized Service Center channel.

Research goes on-line

J. P. Morgan & Co. has established an on-line forum to electronically deliver research publications to its clients. The forum is carried by CompuServe, and information is published using a portable document format from Adobe Systems, Inc. that lets customers read formatted information without requiring them to have the originating software.

Z-Code founder quits

Dan Heller, founder of electronic-mail company Z-Code Software Corp., resigned as executive vice president and board member of Network Computing Devices, Inc. (NCD), NCD bought Z-Code in February in a combination cash/stock transaction. NCD will buy out Heller's stock shares, valued at roughly \$5.5 million.

Full-duplex card debuts

Xerox, Inc. began shipping its CreditCard Ethernet Adapter IFS,

which it said is the first full-duplex Ethernet PCMCIA card. A 10Base-T version costs \$118, and a combined 10Base-T/10Base-2 version costs \$255.

Newspaper goes interactive

The Minneapolis-St. Paul Star Tribune is the latest major metropolitan newspaper to go on-line. The newspaper said it will create an interactive electronic news and information service with The Interchange Network Co., a Ziff-Davis Publishing company. Services will include news and photographs in addition to what is printed in the daily paper.

Gateways, routers port

CNT/Brickson Systems Inc., Cambridge, Mass., has ported its family of IBM SNA gateways and TCP/IP routers to Novell, Inc.'s UnixWare. The products provide SNA links between LAN workstations and IBM hosts, including SNA over TCP/IP connections. Internetwork software is said to transfer TCP/IP traffic over Point-to-Point, frame relay and X.25 networks.

ASX switches evolve

Pure Systems, Inc. in Pittsburgh announced shipment of the second generation of its ASX family of Asynchronous Transfer Mode (ATM) switches. The family includes a 24-port LAN and wide-area access switch as well as backbone switches that are scalable from two to 96 ports. The switches conform to the ATM Forum's User-to-Network Interface 8.0 standard. Prices start at \$21,950.

Synoptics figures slide

TruOptics Communications, Inc. in Santa Clara, Calif., reported a profit of \$16.1 million on revenue of \$186.7 million for its second fiscal quarter, which ended July 1. These numbers are down by more than \$11 million and \$9 million respectively, compared with the same period last year.

Going public

Geoworks in Alameda, Calif., a maker of operating systems for consumer computing devices such as personal digital assistants, has announced an initial public offering of 1.5 million shares of common stock at a price of \$6 per share.

Support

CONTINUED FROM PAGE 57

rely on DHL's own technical support group in Burlington, Calif., for help with OpenView.

HP has invested more in its worldwide service operation than most vendors, Kaplan noted. "The challenge is enormous

and even they are falling short," he said.

Users with multinational networks must coordinate closely with their own branch offices and those of their local resellers or distributors around the world. In Europe, Kaplan said, "The reseller is king. Vendors play a secondary role because the resellers don't want the vendors' help, and the customers like to work with local companies."

Large Systems

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Client/server integration still painful

Users, vendors face incompatibility challenges

By Rosemary Cadoux

Some client/server software providers suggest that application integration can be an easy process.

Easy, of course, is a relative term. Client/server may frequently involve Unix servers, SQL databases and Windows front ends. Further, most of the major client/server applications currently support or plan to support emerging standards such as Microsoft Corp.'s Object Linking and Embedding.

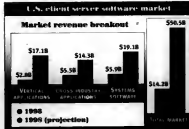
None of this, however, guarantees that applications will fit together easily. It does mean integration is far more possible in the client/server world than it was in the old host-based proprietary software days. But it is still going to take a lot of work. "We all hear from the vendors that integration isn't that big a deal," said Kevin Reilly, vice president of information systems at Richardson Electronics Ltd. in LaFayette, Ill. "It is not that big a deal if you

Research, Inc. in Cambridge, Mass. For example, if one application uses a nine-digit ZIP code in customer files, a programmer will have to figure out a way to reconcile the two. Cameron said.

The upshot for users is that they must choose from among three options: write their own code to link applications; select either integration modules or preintegrated software from vendors; or commission a third party to do the integration work. Each approach has its pluses and minuses (see box at right).

The potential aggravation from an integration project is worth it, according to users, because it will eventually produce asynchronous applications. This, in turn, will eliminate redundancies such as rekeying data that both programs need. Another integration benefit can come from tying in other technologies such as workflow or imaging, which boost the basic functions of the application.

closer
Client/Server



environment fits into client/server nicely: nothing but Unix servers and plain vanilla" software.

But for Reilly and many other users, client/server environments will include a mix of platforms and software—more like Rocky Road ice cream than plain vanilla. Yet even with common operating systems and databases, the client/server applications have been fine-tuned by software providers and, in some cases, built with proprietary tools.

Without consistencies in application architecture and programming design, one application will not know that another exists, much less easily communicate with it. As a result, integration projects can be tricky and time-consuming, and the smallest errors can cause headaches, said Bobby Cameron, an analyst at Forrester

What's ahead

- Oracle said it will make available over the next 12 months a set of graphical user interface specifications so other third-party developers can tailor their front ends to look similar to the Oracle environment.
- SAP is working on a developer's kit that will reduce the amount of coding a user would have to do to tie into the R/3 platform. It is targeting early 1995 for shipment.

Help on the way

The good news, according to observers, is that most client/server software providers are increasingly focusing on integration issues and coming up with a variety of schemes to decrease the burden on users. In the last several months, a flurry of integration announcements have hit the client/server market, from partnership programs to integration tools and services. Other announcements are expected this fall (see box at right).

However, many of these options will still require either lots of hard work or lots of money. In some cases, users are acting as their own systems integrators.

Huntington Bancshares, Inc. in Columbus, Ohio, is finishing an integration project that links in-house and third-party software. The project includes voice-re-

Ups and downs of integration approaches	
1. Go your own way	
Upside	User runs the show, can select the products and level of integration needed. If project is well managed, likely the cheapest route.
Downside	In-house efforts can sometimes turn into runaway projects.
2. Select already integrated products	
Upside	Bulk of integration work completed.
Downside	Choices are more limited and dictated by the partnerships vendors establish. Can get costly. If vendor sells integration modules with product-specific consulting.
3. Bring in a hired gun	
Upside	Project handled by experts.
Downside	Most expensive option, with large-scale integration projects running well into six figures.

sponse software, document imaging, multimedia tools, word processing, mainframe applications and a relational database management system.

Cary Serif, manager of applied technology, said integration can be a major headache because "it is a question of standards. There are none."

"Everyone has their own set of APIs," Serif continued. "Novell has a set. FileNet has a set. IBM has a set. There is really no well-defined means of tapping into any software."

Programmers had to write code that essentially spoke to an application's application programming interface (API), a process Serif said was "not pointing and clicking, not by a long shot."

No secrets

Most of the big name application vendors, including PeopleSoft, Inc., Oracle Corp. and Dun & Bradstreet Software, have published APIs so programmers can write code that links to their applications.

One company, Avalon Software, Inc., has gone so far as to publish its source code and the programming models it uses to design its client-server manufacturing software. But analysts warn that publishing code does not ensure easy migration. It

the communications and data exchange routines needed to share data between R/3 and other software.

However, even SAP officials said this is not kid stuff. "We are working on a kit that will automate this more [and] make it easier," said Pat Deg, a senior corporate consultant. "Today, we supply the hooks."

Product plans

- PeopleSoft will announce at month's end the Systems Integration Partnership Program, which will essentially provide users with a roster of integrators from which to pick if a major client/server project is on the agenda.
- Great Plains Software next month will introduce tools to link its financial software to Lotus Development Corp.'s Notes groupware and Watermark Software, Inc.'s Imaging Manager imaging system.

Simple solutions

What users are finding is that there are different levels of integration, some of which are more manageable than others.

A common method today is to create a bridge between applications so they can share data. This falls short of true integration, where applications work together and changes made in one application are automatically reflected in related applications. But in many cases, data transfer more than does the trick.

Users can also turn to vendors to provide integration modules. This approach is not cheap, but it reduces the integration work load for users. The Vantive Corp., which sells customer support software, now offers a series of modules called Open Links that will hook its client/server applications to other software or tech-

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DECISION-MAKING IS THE RESULT

**"EVERY
BUSINESS IS
A DECISION-MAKING
FACTORY. WHEN OUR
CUSTOMERS CAN MAKE
THESE DECISIONS
MORE QUICKLY AND
WITH MORE COMPLETE
INFORMATION, THEN
WE'VE ADDED VALUE."**

**Robert E. Keenan
President and
Chief Executive Officer
The Dun & Bradstreet
Corporation**

The ultimate goal of Dun & Bradstreet Software solutions is to help customers improve the most crucial process in any business: the process of decision-making. In the Information Age, all employees have become "knowledge workers" to one degree or another. Productivity gains flow from the value of their decisions, allocating people, time, money and other resources to meet enterprise goals.

To make decisions that positively impact your company's performance, profitability and value, people need decision support tools that increase the timeliness and usefulness of decision information. This is the function of D&B Software's SmartStream platform. Applications such as Information Stream, HR Stream, Manufacturing Stream and Distribution Stream efficiently gather the data generated in everyday business processes from orders to shipments. SmartStream Decision Support then turns these data into decision information, delivering the knowledge people need for decisions that reduce costs, enhance competitiveness and improve the bottom line.

With better decision-making, customers can improve their business processes, fine-tuning activities for optimum information flows and faster time-to-decision. As a blueprint for process reengineering, SmartStream helps customers construct more efficient business processes to gain tangible returns on their information technology investments.

DELIVERING CONVENIENT DECISION INFORMATION

Every business generates a wealth of decision information every day. For example, each sales order tells a company something about its competitive position and marketing performance. The problem, of course, is that few managers have enough time to extract and format this information so it can tell them where their business is going and how they should guide it.

SmartStream Decision Support is a client/server application that lets customers integrate, analyze and distribute information from the entire company in an easy-to-use environment. For example, customers can use SmartStream Decision Support to distribute realtime financial statements electronically, allowing managers to view summary reports, supporting schedules and notes at whatever level of detail they desire. SmartStream Decision Support also serves as an interface between transaction and offline environments, allowing managers to easily extract current information for spreadsheet "what-if" analyses.

A PLATFORM FOR BUSINESS PROCESS IMPROVEMENT

In addition to letting managers access more financial, manufacturing and employee information for decision-making, SmartStream is a resource for a better understanding of the business processes that generate that information. Unlike a process reengineering consultant, however, SmartStream "teaches by example," allowing companies to examine the impact of major or minor workflow changes.

Rather than porting its mainframe products to client/server, D&B Software developed SmartStream from a different paradigm. Based on research and customer input, it created an enterprise model, a "virtual company" composed of over 1,000 business processes that showed the data needs, workflows, activities and hand-off points encountered by every organization. This enterprise model forms the basis of all the functions that go into the SmartStream product suite, providing its users with an integrated, proven process for managing business information.

For example, Financial Stream is based on the approximately 180 processes that are used by a corporate accounting organization, including everything from posting an invoice to preparing monthly

closing entries. Through building these processes into SmartStream, D&B Software was able to incorporate the best ways to route information, identify information needs that were typically not met and create solutions that can cross traditional department and application barriers to meet business objectives.

One specialized application, SmartStream Budget, directly addresses the cross-functional workflow improvement needs of one of the organization's most complex enterprise-wide tasks: the budgeting process. Using realtime data from Financial Stream, managers stay consistent with standard budget models provided by budget administrators, and stay on target with guidelines and instant feedback from senior management delivered via E-mail.

This emphasis on timely decisions and real-world business processes was more than just an application design methodology. The processes in the enterprise model become user activities in the final product, grouped into workflows that continue to show customers the best ways to manage decision information. Unlike applications that use messaging as an add-on layer, SmartStream's Activity Manager is an integral component for gathering and using transaction information.

This series has focused on what makes SmartStream different — the technologies, services and unique capabilities that make up the platform. But for many customers, their interest in SmartStream has more to do with the company that provides the solutions.

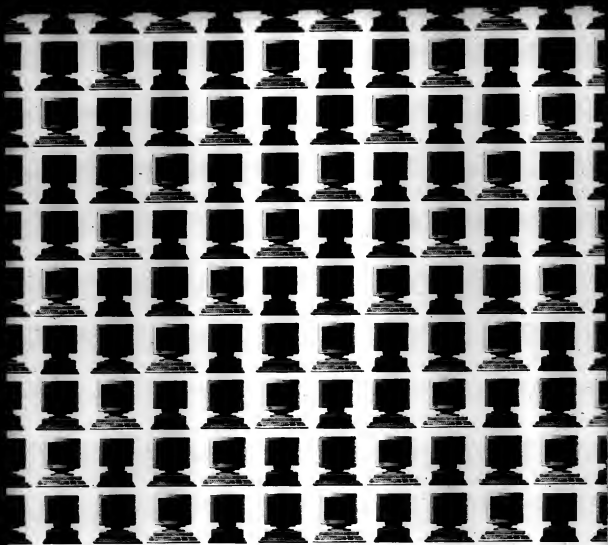
At LSI Logic Corporation, the leading worldwide manufacturer of high performance custom semiconductors, their years of experience with D&B Software's mainframe applications provided the impetus to look into SmartStream. "We know we want to move to client/server, but that's an entirely different environment," says Jonnie Woodward, director of Human Resources Information Services for LSI. "The big issue is the support we'll receive. Everything we've seen about HR Stream shows us it is a very exciting product, but our ongoing relationship and comfort with D&B Software is an even more important factor."

So, with all the SmartStream features and benefits that this series has covered, it may well be the company's history of providing customer satisfaction and value that plays the greatest role. For more information about D&B Software solutions, call 1-800-290-7374.

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Large Systems

Jeffrey M. Kaplan

Support requires a strategy



The advent of client/server computing has forced customers to rethink their information technology strategies. They are reconsidering their hardware plat-

forms and software operating systems and redefining their end-user applications and database management systems. But few customers are paying equal attention to one of the most significant cost elements in their information technology budgets: support services.

This oversight leads to needless expense and the inefficient use of in-house and external skills to get the "best bang for the buck" from information systems.

Datquest research shows that customers spend at least one-third of their

information technology budgets on support services, including in-house personnel and outside vendors who design, install, maintain and manage computer and communications equipment. Additional research suggests customers can pay three times as much for end-user support services as they pay for desktop hardware and software.

Despite this enormous investment in staff and services, many CIOs and CFOs admit they have not developed open support strategies. Not surprisingly, these same senior executives say they are not satisfied with the quality of support and ease of use of their information systems.

This situation is likely to get worse before it gets better unless IS management changes its thinking. Client/server computing is driving even more computing power into functional departments, and mobile computing is giving a broad cross-section of end users remote access to corporate information systems. This dispersion of computing resources and end users is straining internal support.

Compounding this situation, economic constraints brought on by intensifying competitive pressures have driven many customers to downsize their in-house support groups and/or outsource this function entirely.

Few customers are paying attention to one of the most significant cost elements in their information technology budgets: support services.

Downsizing or outsourcing an internal support organization is not inherently wrong. The mistake is to take this action for purely economic reasons. Support services is where the "rubber meets the road" when it comes to maximizing the return on the information technology investment. It is true that hardware and packaged software are commodities, and installing and maintaining both has also become a commodity.

However, major user organizations tailor information technology to meet their business requirements. This customization process suggests that an equally unique configuration of support services should also be in place. Too many customers have been disappointed by overlooking this point.

Therefore, customers should spend more time identifying service and support needs. These requirements should reflect the changing computing requirements of the organization and recognize its business objectives and budgetary constraints.

This self-appraisal should be the foundation of a support services strategy, a business plan as detailed as any other strategy statement. Preparing this document will compel a customer to prioritize how to deploy limited resources to meet

computing goals. Should it focus its internal staff on routine installation and maintenance issues? Or should a customer leave these tasks to an outside vendor so the in-house staff can concentrate on applications development and new technology deployments?

Be proactive

These questions seem obvious, and many customers claim they make these decisions on a daily basis. But that is the problem: Most customers make tactical decisions in response to daily issues. They only examine these issues when senior management confronts them with an outsourcing arrangement.

By proactively initiating a support services strategy, information technology managers can evaluate the true costs and benefits of support services and devise a solid plan to deliver these services with the proper mix of in-house staff and external resources.

Many information technology managers are on the defensive trying to protect dwindling staffs from further encroachment by outsourcing arrangements. Adopting a proactive approach to building a solid services strategy helps them protect their organization's information technology investments and ensure comprehensive end-user support.

Kaplan is a director at Datquest, Inc.'s Worldwide Services Group in Framingham, Mass.

Financial message exchange uses upgrade to cut customer charges

By Thomas Hoffman
CULPEPER, VA

As the international banking community's primary messaging gateway, The Society for Worldwide Interbank Financial Telecommunication (SWIFT) is quietly upgrading its information systems architecture to improve the reliability of its network for existing and prospective customers.

As part of its \$10 million Capacity Rationalization Project, SWIFT is upgrading a slew of Unisys Corp. A series mainframes in its data centers here and in Holland and Brussels. The project, which SWIFT expects to complete by year's end, is designed to bolster the organization's raw processing power while refining its environmental costs. Most importantly, the new mainframes are expected to increase SWIFT's overall uptime.

Closer to perfection

For example, the SWIFT network, which processes roughly 2 million messages per day to assist currency and securities transfers, maintained an uptime rate of 99.9% in 1992. With even more fault-tolerant hardware in place, SWIFT is looking to bolster its uptime to 99.99% this year, with further improvements expected in 1995 after the project has been completed.

While the differences in SWIFT uptime seem minimal, they can be very costly for larger banks that handle thousands of financial transactions each day, according to Auble Curtis, manager of SWIFT's

operating center here. By upgrading its 14 Unisys A6 regional processors with newer models, SWIFT expects to reduce its downtime from six to seven minutes to one to two minutes each time the computer goes down, Curtis said.

That is significant for an organization that processes thousands of international currency translation messages each day, according to David Medeiros, an analyst at The Tower Group, a Wellesley, Mass., financial services/technology consultancy.



SWIFT's Auble Curtis says a small difference in uptime can be crucial for banks handling thousands of transactions daily.

Proven commodity

SWIFT, which has been using Unisys A series machines since 1990, considered other mainframe technologies and even some distributed platforms before deciding on a series upgrade path last year. "We decided to stay with Unisys since it had the reliability and the scalability that we needed," Curtis said.

With the upgrades, SWIFT will swap out other Unisys A3 and A5 machines with faster A6 units at all three data centers. Because it is using fewer and more efficient processors, the A6 machines have helped SWIFT's Culpeper data center cut its monthly electrical costs from \$60,000 to \$35,000.

In other moves to attract new business, in June SWIFT slashed overtime participant fees for money managers by 74% from \$27,000 to \$6,900. Similarly, the cooperative reduced membership fees for commercial banks from the \$45,000-to-\$50,000 range to \$15,000, retroactive to April.

Briefs

Scaling a high peak

Tandem Computers, Inc. claimed that record-breaking results were achieved by its Himalaya parallel server using the Transaction Processing Performance Council's TPC-C benchmark. Tandem said a 115-processor Himalaya K1000 parallel server achieved 20,919 transactions per minute at a cost of \$1,532 per unit benchmark. The Himalaya server exceeded more than 1,600 physical disk I/Os per second, more than 87,000 logical disk I/Os per second and more than 32,000 SQL statements per second against a 1.874Gigabyte database.

Software patents get help

The U.S. Patent and Trademark Office has hired nine computer scientists to help patent examiners do a better job reviewing software patents.

HP opens client/server center

Hewlett-Packard Co.'s service activities continued to move last week as the company cut the ribbon on its Open Systems Transition Center in Dallas. The center is intended to help users move from mainframe to client/server computing by providing access to open systems technologies, including database and conversion tools. In other service moves this year, HP launched a 4,000-member systems integration group, created an outsourcing operation and formed a business process re-engineering unit.

Bank, EDS team on \$350m pact

In a smaller version of its Xerox Corp. megasourcing contract, Electronic Data Systems Corp. reached a two-year agreement on a global, \$350 million, 10-year outsourcing contract with Ameriquest Express Bank.

Client/server

CONTINUED FROM PAGE 63

nologies, such as fax systems.

One module that ties the Vantive software to an automatic call distribution system sells for \$10,000. Eric Docter, a director of marketing at Vantive, said users also need at least a few days of consulting to help implement the link. That fee could run anywhere from \$2,000 to \$10,000, depending on the specifics of the project, he said.

Amden Software also plans to roll out a series of integration modules, which a company official said would likely be priced in the "tens of thousands of dollars range."

Going outside

Another approach would be to sign up with a consulting firm or vendor to handle the integration. While users will get made-to-order integration, they will also pay for it. Industry estimates vary, but client/server projects can easily cost at least half of the client/server software fee.

Considering that client/server application fees can cost \$100,000 or more, these projects are bound to require big bucks.

Long term, some partnership programs, such as Oracle's Cooperative Applications Initiative announced in April, could have the biggest payoff for users. On paper, these deals say the partnering vendors will handle the integration. The trade-off is that a user must be committed to the vendor that has arranged one of these programs and be willing to piggyback applications from a select list of integration partners.

Micro Focus, Inc. has announced Fileshare for CICS/VSAM 1.0, a file server for mainframes and client systems.

According to the Palo Alto, Calif., company, Fileshare for CICS/VSAM 1.0 provides transparent access to mainframe VSAM files from applications running on workstations. Client systems can be running DOS, Windows or OS/2.

Services include multiuser access to shared files, record locking, update logging, roll forward recovery and transaction processing.

Fileshare for CICS/VSAM 1.0 runs on a mainframe under CICS control, receives requests from client applications, performs required VSAM processing and passes back any retrieved records and file status codes.

Fileshare for CICS/VSAM 1.0 costs \$2,000 per logical CPU.

► **Micro Focus**
(415) 856-4101

CKS North America has announced NC-Pass NetWare and NC-Pass LAN Server, security management products that link IBM mainframes with LAN Server and Novell, Inc. NetWare systems.

According to the Pittsburgh company, NC-Pass NetWare and NC-Pass LAN Server provide enterprise-wide, centralized authentication server functions including a single user ID log-on to multiple LANs and LAN/WAN dial-in security.

The products also provide central auditing and recording of all LAN access and use the enterprise system as the authentication server.

A handheld device can be used for password validation and end-user

authentication.

Prices start at \$37,000 for combined mainframe and LAN components.

► **CKS North America**
(412) 928-3200

XDB Systems, Inc. has announced the XDB-Link Application Server for DRDA, an IBM Distributed Relational Database Architecture (DRDA) protocol server for client/server platforms.

According to the Laurel, Md., company, the XDB-Link Application Server for DRDA lets a DB2 for MVS, DB2/VM or SQL/400 application initiate a dialog to access and manipulate data stored on an XDB-Server database running on a LAN, PC or mobile computer.

Once the connection is made, the location of the data becomes transparent to the application.

Prices start at \$21,000 for one to 10 users.

► **XDB Systems**
(301) 217-6800

PowerCerv Corp. has introduced PowerMan, graphical client/server manufacturing planning software.

According to the Tampa, Fla., company, PowerMan is an integrated manufacturing enterprise resource planning system that supports interactive resource planning, workflow management, electronic data interchange, bar-code data collection and a paperless environment.

The product includes object-oriented programming, a relational database and a graphical user interface. It provides an open environment scalable across multiple hardware platforms and operating systems.

Prices start at \$85,000.

► **PowerCerv**
(404) 837-3822

Real Solutions has announced SAF 1.1.2, a storage automation facility (SAF).

According to the Bay City, Mich., firm, SAF 1.1.2 provides real-time, storage automation facilities for MVS data management tools.

Management procedures can be initiated based on the conditions in the storage system rather than solely on time. The product also prioritizes data management functions according to the return on investment to maintain free space availability.

An early warning feature sends alarm messages directly to the storage administrator's terminal.

License fees are priced starting at \$14,700.

► **Real Solutions**
(517) 894-5829

Product shorts

Banner Software, Inc. has announced Exitman 4.0, MVS environment management software. The product provides dynamic loading and reloading of all MVS exits. The Optimizer module adds selection criteria for direct migration from primary volumes to migration Level 2. Cost: Prices start at \$10,500. Banner Software, Sacramento, Calif. (916) 364-0900.

FireSign Computer Co. has announced Outbound 3.1, a file-transfer product with support for Novell, Inc.'s NetWare for SAA. The product performs unattended file transfers between mainframes and PCs without interfering with other activities or affecting desktop users. Cost: Prices start at \$22,995 for the host component and \$450 per server for the NetWare component. FireSign Computer, San Francisco, Calif. (415) 366-7225.

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Rough seas ahead for object developers

Users need more products and tools to bring object-oriented applications into mainstream

By Kim S. Nash

Corporate information systems developers are about to step into a storm of object-oriented activity with plans to increase the number of object applications at their shops by 40% to 80% by 1998, according to a recent survey on object technology.

Further, although Microsoft Corp. operating systems are expected to steer the show for most object-development projects, Sun Microsystems, Inc.'s Solaris will remain a strong contender, respondents said in a poll conducted late last month by Market Perspectives, Inc. in Framingham, Mass. (see charts).

WHAT PERCENT OF YOUR DATA PROCESSING SUPPORT DO YOU EXPECT WILL BE SPENT ON OBJECT TECHNOLOGY?

Platform Family	1994	1996
IBM	25.3%	30.3%
Solaris	26.7%	22.2%
Windows	21.3%	21.6%
Unix	13.3%	15.6%
Other	14.4%	20.1%

Source: Market Perspectives, Inc., Framingham, Mass.

Although object technology appears to have caught the eye of IS, users said they need several items before object development can become mainstream. These include the following:

- Systems and project management tools that are specifically targeted at object development. For example, object-class libraries are becoming more widely available, but vendors in that sector have not agreed on object naming conventions, said Jason Browning, distinguished member of the technical staff at AT&T Bell Laboratories in Holmdel, N.J.
- Sometimes, objects from different vendors' libraries are named identically, thereby confusing applications when they execute, Browning said.
- Some firms, such as object database maker Ontos, Inc., provide tools to reconcile such conflicts, "but you still have to go through and verify everything, which takes time," he said.
- Object-specific analysis and design products. They do exist and have for several years.

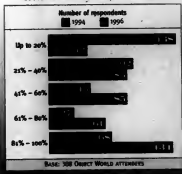
Users need more products and tools to bring object-oriented applications into mainstream

Users need more products and tools to bring object-oriented applications into mainstream

Users need more products and tools to bring object-oriented applications into mainstream

Users need more products and tools to bring object-oriented applications into mainstream

WHAT PERCENT OF YOUR APPLICATION BASE COULD BE CONSIDERED OBJECT-ORIENTED?



Source: Market Perspectives, Inc., Framingham, Mass.

Intersolv boosts Q+E features, prices

By Melinda-Carol Ballou

Intersolv, Inc. beefed up Q+E Software's query and reporting tool and raised prices earlier this month, pleasing some users with the new features but annoying others with the higher costs.

Under an agreement with Q+E, Microsoft Corp. embedded Q+E's query tool into earlier shipments of Microsoft's Excel spreadsheet. Through this, Q+E usage spread to several million Excel users. But the agreement between Microsoft and Q+E ended when Intersolv acquired Q+E in April. Now, Intersolv wants to leverage that customer base with a deal that will let users upgrade to Release 6.0 of Q+E tools for \$89 until Oct. 31. Thereafter, the price will be \$499; previously, it was \$299.

While a number of users applauded the product's increased functionality, others said the new full price and licensing structures will make the costs prohibitive.

Losing customers

"We don't find things in there to justify the price," said Gary Tollefson, manager of computing services at Fisher Controls Co. in Marshalltown, Iowa. "We're going to drop Q+E [for Microsoft's Access] because of the price and new licensing structures, and you'll find me to be one of the biggest Q+E buyers around."

In addition to raising the package's price, Intersolv has also jettisoned Q+E's concurrent licensing policy, he said.

In some cases, Tollefson's organization was able to get a 20-to-1 user-to-copy ratio with the concurrent licenses, which were malintended by meters. But now his group will



An improved report writer may help the Q+E query tool continue to garner market share despite increased prices

not "even be able to upgrade the concurrent licenses that we own," he said, because of Intersolv's shift in licensing policy. In other words, Tollefson's company will have to pay for individual Q+E licenses, whereas users of Microsoft's Office suite will be able to use Access from the LAN without additional cost.

"The pricing issue has come up only since the Intersolv purchase and is not inconsistent with the way Intersolv treats its other products," Tollefson said. "I think it's pay-

but users want them included in the object-oriented programming tools they use today. "I'm not into buying a separate methodology product... I want a full package," said the development manager at a large bank based in Illinois. "We've had cases where we've used object technology [and haven't used the code] again — which defeats the purpose of going to objects to the first place."

• A reliable and standard way to map objects to relational databases and vice versa. High-level tools — as opposed to down-and-dirty programming languages — are needed to let users and developers access objects by named class, according to Alex Cone, president of Object Technologies, Inc., a consulting and independent software firm in New York.

"An object manager of sorts that would hand objects to you in a single standard format is what we're after," Cone said.

Right now, such products and handling methods are not widely available, although Next Computer, Inc.'s Enterprise Objects Framework was designed to do the job. The framework "takes a lot of the grunt work out of dealing with objects," Cone added.

WHAT DO YOU EXPECT WILL BE THE TOP APPLICATION DEVELOPMENT OPERATING SYSTEMS IN YOUR ORGANIZATION?

Operating System	1994	1996
Windows	0%	24.7%
Solaris/Windows	23.9%	20.5%
Windows	42.7%	21.8%
Windows NT	9.5%	20.7%

Source: Market Perspectives, Inc., Framingham, Mass.

Q+E, page 72

The 12 steps to ODP. See page 89.

Steve Moore

Objects of confusion

It's no longer safe to assume that an object is something as simple as a rock or a spoon. Nowadays, the term object also refers to one of the fuzziest logical concepts ever handled about the information

industry: Everyone understands objects of desire and objects of derision, but no one needs to understand objects of object-oriented software technology.

Are objects chunks of reusable software code, or are they cute icons we love to click on? Or could they be complex "managed objects," such as the Management Information Bases associated with SNMP?

When you ask vendors, they usually say "all of the above," but that does nothing to dispel the cloud of confusion surrounding objects. Some vendors are simply seeking terminology that helps them grapple with new and complex product development techniques. But other vendors are deliberately clouding users' minds with marketing mumbo jumbo within which the term object has no more specific meaning than the terms "robust" or "solution" or (shudder) "robust solution."

Because we seem to be stuck with three principal types of objects, let's define them. With reusable software objects — also known as program objects — the idea is to assemble a group of software modules that can be linked together

on demand to form a variety of different applications. Then it's hoped that users will no longer risk buying several separate network management applications that don't talk to one another. Rather, they will save money and staff time by using program objects that can be automatically mixed and matched like Lego blocks to form customized network management applications that do talk to one another.

We can dispense with the second type

of objects — graphical objects we click on in user interfaces — simply by agreeing to call them icons.

Highly complicated

That leaves the most complex type of object: the managed object. This term covers a wide variety of sins, including computers of all types, network devices of all types, different kinds of local- and wide-area network connections, databases, video clips and text files, to name just a

few. In this case, why not leave the objects to the programmers and product developers? Everyone else will be better off if they designate all these things by their actual names.

So 'em, vendors. Deliver us from robust object-oriented solutions, and please don't call a spade an agricultural object.

Moore is a Computerworld senior editor, networking.

Q+E

CONTINUED FROM PAGE 71

tially due to the fact that the company doesn't have other products that fit in this market space."

Other developers and industry analysts, however, enthusiastically greeted the new capabilities of Release 6.0.

"They've had the same price since it was packaged with Excel, and the \$99 upgrade to a full-blown package is an incredible deal for what you get, though the \$499 tag would be well worth it," said Doug Jankuski, an analyst at United Healthcare Corp. in Minnetonka, Minn.

This version contains several features that Jankuski said are critical. These include index support for Clipper databases, which lets users obtain data faster; print preview, which lets users zoom in on reports or view multiple pages; graphics support; and full support for Microsoft's Object Linking and Embedding 2.0.

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Baker Software Corp. has announced Visual Baler 1.0, a spreadsheet-based development tool.

According to the Rolling Meadows, Ill., company, Visual Baler 1.0 lets spreadsheet users develop analytical and number-crunching graphical applications.

Users can use existing spreadsheet files as a starting point for preparing

self-running Windows programs without any knowledge of programming languages. Visual Baler 1.0 automatically generates a Windows .EXE spreadsheet application that includes a title screen and a program icon.

The application framework includes prebuilt routines for functions such as file open and save and printing.

Visual Baler 1.0 costs \$499.

► Baker Software
(708) 506-9700

Visual Edge Software Ltd. has announced the Cross-Platform Toolset.

According to the St. Laurent, Quebec, company, the Cross-Platform Toolset provides all the objects, libraries and documentation needed to develop applications for multiple platforms.

The product is built on native tool kit controls so the ported application interface looks and behaves exactly like an application written directly to the native graphical user interface. To deploy the

application, the developer recompiles and relinks the code with each platform's object library.

The Cross-Platform Toolset is available for Hewlett-Packard Co.'s HP/UX and Sun Microsystems, Inc.'s SunOS and Solaris platforms with application deployment on Windows 3.1. Support for Microsoft Corp.'s Windows NT, the Macintosh and OS/2 platforms is slated for later this year. The Cross-Platform Toolset costs \$2,500.

► Visual Edge Software
(514) 332-6430

InterSystems Corp. has announced Visual M, graphical user interface (GUI) development software.

According to the Cambridge, Mass., firm, Visual M is based on a combination of Microsoft Corp.'s Visual Basic and the ANSI-standard M language. It is part of InterSystems' GUI of Choice facility, which features alternative GUI development environments for high-volume client/server applications.

Visual M is included in InterSystems' Open MSQL Developer for \$395.

► InterSystems
(617) 621-0600

Interactive Development Environments, Inc. has announced that Software Through Pictures for the Object Modeling Technique (STP/OMT) supports Persistence Software's Persistence, a development tool that links objects to relational data.

According to the San Francisco company, this support provides object-oriented transaction processing that extends the on-line transaction processor mechanisms of relational databases to objects. STP/OMT supports requirements analysis, design, implementation and documentation, among other tasks.

STP/OMT costs \$12,000 per user.
► Interactive Development Environments
(415) 543-0600

Product short

Intersystem Concepts, Inc. has introduced the Everest Authoring System for Windows, an interactive multimedia development tool for creating computer-based training applications, performance support systems, lesson applications and presentations. The system features multilevel, object-oriented authoring and visual drag-and-drop. Cost: \$4,395. Intersystem Concepts, Columbia, Md. (410) 730-2840.

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


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A few wholesale distributors still manage to be indispensable to discount retail giants like Wal-Mart. What have they got that other wholesalers haven't got?

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By every indication, Wal-Mart Stores, Inc. has never had much trouble selling anything. With \$67 billion in revenue in 1993, America's largest and fastest growing retailer seemingly moves everything — from Barney dolls to double-breasted blazers — with equal aplomb. So who needs middlemen like wholesale distributors?

Yet the company announced in April that a New York wholesale distributor, GT Interactive Software (GTIS), had won a contract to market and manage sales of PC software in its stores.

You wouldn't expect the Bentonville, Ark.-based merchandising superpower to stumble over something so eminently salable as PC software. But as it turns out, rack jobbing, as it's called in the trade, can be a real nuisance to mass merchants. Each of the potentially hundreds of software titles on the average store rack requires a unique stock number, or SKU, making inventory management difficult. Software also comes boxed in many shapes and sizes, so physical distribution is a headache.

And these days it's plain hard to find good part-time help who can explain to casual shoppers such

BY BRIAN MCWILLIAMS

Wholesale, page 80

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Wholesale

CONTINUED FROM PAGE 77

line points as the relative benefits of Windows or OS/2.

No wonder Wal-Mart inked the deal with GTIS, a New York-based subsidiary of Good Times Entertainment Co., which received a Vendor of the Year award from Wal-Mart in 1991.

The agreement comes at a time when price-conscious outfits such as Wal-Mart, Kmart Corp., Target Stores and their mega-retail brethren are putting a terrible squeeze on the firms that serve as a conduit between retailers and manufacturers.

It's not enough anymore for wholesalers to have a perfect fulfillment record and high-quality products, says Patrick Dolan, partner-in-charge of Arthur Andersen's wholesale distribution industry practice in Chicago.

"There's a power shift out there. Big retailers are telling their suppliers, 'If you want to keep my business, you have to constantly add unique value, and you can't charge me anything for it,'" Dolan says.

For many wholesale distributors, already limping along on the slimmest of margins, that can be an impossible assignment. But a handful of technology-savvy firms are discovering they can beat the reaper by combining their systems know-how with innovative marketing and merchandising programs.

"To survive in today's marketplace, wholesale distributors must provide a wider range of value-added services," says Michael Cantwell, national director of Grant Thornton's manufacturing/distribution practice in Chicago.

Cantwell says the following capabilities can enable wholesale distributors to avoid obsolescence:

- Sophisticated inventory management systems.
- Flexible product packaging.
- Innovative merchandising and marketing programs.
- Nationwide end-user support.

"Distributors who can't function as an extended member of the merchandiser's team will fall by the wayside," Cantwell warns.

TAKING AWAY THE REEK

In mass merchandising, where performance is measured in sales dollars generated per foot of store space, nothing pains store managers like running out of stock on a popular item or being overstocked on a dog nobody wants.

According to Ron Chaimowitz, general manager at GTIS, "We exist to make life as simple as possible for our customers. One way we can do this is by taking all the inventory risk away from them."

The risks are plenty. According to Dolan, inventory typically constitutes the single largest asset on a wholesaler distributor's balance sheet. Inventory that is managed improperly—for example, if a distributor gets stuck with a load of nonreturnable items—can nearly sink a company.

To ensure its customers' software racks are always stocked for maximum sales—while keeping its own safety stock at a minimum—GTIS relies on a proprietary automatic replenishment system, a prerequisite for competitive advantage as a wholesaler.

The GTIS system runs on an IBM RS/6000. It handles the more than 300 software titles that GTIS distributes to some 1,600 Wal-Mart stores and its other major customers, Chaimowitz says.

Each night, GTIS downloads sales data from Wal-Mart's computers and runs it against a replenishment algorithm customized for individual stores. The system tracks data such as safety stock levels and reorder points and automatically generates purchase orders.

Unlike many Wal-Mart vendors that are responsible only for replenishing the retailer's regional warehouses, GTIS ships directly from its New Jersey distribution center to individual stores.

The facility is run by a paperless pick system. Instead of filling orders from a printout, warehouse workers are guided around the 750,000-sq.-ft. center by a network of lights mounted above each bay.

The lights indicate while product should be picked next, and a digital readout shows the number of boxes to be added to the order. The computer-driven system also generates stickers using specific retailers' SKUs and pricing. On-line since 1993, the system enables GTIS to provide 48-hour turnaround on orders.

With the growth of SKUs and the increase in labor costs, sophisticated inventory management systems and automated warehouses are starting to show up in the business plans of more wholesale distributors. Handelman Co., one of the nation's largest and most successful wholesale distributors of music and video to mass merchants, has just opened a 324,000-sq.-ft. automated distribution center in Nevada to serve the western U.S.

Like GTIS, Handelman relies on a proprietary inventory management system, but the Troy, Mich.-based company designed its system around the "perishable" nature of the products it carries.

The system tracks Handelman's inventory at more than 6,000 locations. It took 18 months to build and has been on-line since 1988.

As new releases come out, the IBM RS/6000-based system gathers data on a title's first week of sales and projects whether it will be a hit, a dud or something in between. It then generates an appropriate reorder scheme. When sales of a hit title begin to drop precipitously, as they often do, the system adjusts quickly to avoid overstocking.

"It's our responsibility to pick the hits," says Mark Schwartz, vice president of marketing. "If we guess wrong, we offer our customers a 100% exchange guarantee."

DOING THE HOMEWORK

Thanks in part to its expertise in building systems, GTIS boosted Wal-Mart's software sales an estimated 60% in the first quarter of 1994 after taking over managing the retailer's software racks last year, according to *Computer Retail Week*. And Handelman, which services more than 23,000 retail outlets, did more than \$1 billion in sales.

Because some product lines are very specialized and ever-changing, Cantwell says large retailers depend on wholesalers to know the product lines for them. This is an important part of the service they provide, he says.

If more retailers did a full economic analysis of buying directly from manufacturers, they might discover using a wholesale distributor is often in their best interest, Dolan says.

"Buying on product price alone, without looking at the total delivered cost of the product, is a mistake," he says.

When executives at membership warehouse club Price/Conco looked for a way to include books among their offerings, they did their homework carefully. Their conclusion: The best option for getting books from the printing

WHY RETAILERS WON'T BUY FROM WHOLESALEERS:

WHY RETAILERS BUY FROM WHOLESALEERS:

Source: Mike Cantwell, national director of manufacturing/distribution, Grant Thornton, Chicago

Management

press to consumers was to turn the responsibility over to San Diego-based wholesale distributor Advanced Marketing Services.

According to Jim Dixon, executive vice president of marketing and merchandising at Advanced Marketing, the task of selecting, ordering and managing book inventory is daunting to mass merchants. More than 36,000 new books are printed each year by thousands of active publishers.

"There's no way a mass merchant can be successful buying books directly," Dixon says. "By partnering with us, they have consolidated access to over 300 publishers. Our strategy is to focus on a limited number of titles that will perform best in the customers' location."

THE PERFECT NICHE

Since it began operations 12 years ago in a small warehouse, Advanced Marketing has built its annual sales to \$590 million and has begun expanding internationally. Dixon says it has virtually no competition in its niche today.

Like other successful wholesale distributors to mass merchants, Advanced Marketing keeps costs down with careful inventory management, analyzing sales patterns to determine a particular store's capacity to sell a certain title. The wholesaler's Digital Equipment Corp.

VAX-based system supports a level of detail that exceeds most inventory management systems.

"At any time, I can tell you the inventory on a particular title, whether it's in our warehouse, on a truck somewhere or on our customers' shelves," Dixon says. "I can also give you the title's sales history broken down by store, as well as its projected sales."

SELLING IT

To be sure, technology enables smart wholesale distributors to take the guesswork out of their operations and keep costs low. But excellence in distribution is not sufficient to win the business of mass merchants. Successful wholesalers take a broader view.

"The service we provide is managing the retail space," Schwartz says. Handman develops complete marketing and merchandising programs for its customers, absorbing the costs for everything from signage, advertising and in-store fixtures to ROM-based multimedia kiosks that give shoppers sneak peeks at the department's music and video offerings.

Similarly, Advanced Marketing provides integrated marketing programs for its customers that include direct mail, special displays and book signings by celebrities such as Norma Schwarzkopf.

"There's a power shift out there. Big retailers are telling their suppliers, 'You want to keep my business, you have to constantly add unique value, and you can't charge me anything for it.'"

PATRICK DOLAN

(Partner-in-charge of Arthur Andersen's wholesale distribution industry practice in Chicago)

Intelligence

Files

IS center gets go-ahead

In January, the Conference Board will launch a new service for information systems executives tentatively known as the Center for Information Services.

The center will sponsor IS-related research and one-day forums on systems development, telecommunications and monitoring new technology.

The New York-based organization already runs two 60-member councils for North American IS executives and an annual IS conference. The director of the center will be George Newman, who will continue to manage the council programs.

Companies that join the center can participate in IS council meetings. The

membership fee is \$6,000.

The Conference Board is an organization of 2,000 corporate members that sponsors forums, conferences and research programs on a wide variety of business topics for executives.

Help wanted: IS architects

Post... Want to make up to \$500,000 a year? Regional field operating companies, as well as major financial services and IS consulting firms, are searching for senior IS architects, database architects and systems integration planners, according to Beverly Lieberman, president of Halberstam Lieberman Associates, Inc., an IS executive recruitment firm in Stamford, Conn. Total compensation for these jobs ranges from \$200,000 to more than \$300,000.

"Architecture has become a singularly important function in some companies," Lieberman says. Senior IS architects are now reporting to chief information officers

and Ivana Trump. GTIS employs a cadre of merchandising experts who work the field, helping stores solve problems such as how to draw shoppers into the "bullpen" where software and electronics are usually sold.

Despite the current success of these wholesale distributors, Deane says the industry as a whole remains in deep trouble and that a shakeout is under way. "It's becoming increasingly hard to find any bright lights," he says.

For now, these firms take some satisfaction

from knowing they have bucked the trend. But it's second nature for wholesale distributors to take nothing for granted.

"You live by your wits. As a middleman, you serve at the pleasure of manufacturers and retailers," Edm says. That sentiment is echoed by Chaimowitz. "The business is ours only as long as we continue to perform," he says.

McWilliams is a free-lance writer in Durham, N.H.

SAVING ONE THING, DOING ANOTHER . . .

Many wholesale distributors feel the costs of technology outweigh its benefits . . .

... yet 97% says IS will be a key factor in the future — not only as a cost of doing business, but also of retaining business.

With the growth of SKUs, sophisticated inventory management systems are becoming crucial for wholesale distributors . . .

... yet less than 25% of the industry is using technology such as EDI, bar coding and scanning and on-line order-entry systems.

Labor costs are increasing faster than other operating costs, and customers are expecting fast turnaround times . . .

... yet only 54% use some form of automated warehousing.

Source: National Association of Wholesale Distributors, Washington

ers and drawing the same total compensation as the heads of application development or computer operations.

Why are IS architects hot? "All those companies are figuring out the best ways to move off their malfeasance dependencies. When you do that, you have to figure out how you will build your infrastructure. Systems organizations are building their houses again, and when you build a house, you hire an architect," she says.

Companies are shedding out big bucks to lure the few professionals who are highly polished businesspeople and highly skilled technicians, Lieberman says.

Internet job search

With record numbers of its members unemployed, the Institute of Electrical and Electronics Engineers (IEEE) has launched an electronic service to put job seekers in touch with potential employers.

Beginning this month, the U.S. activities division of the IEEE is offering an electronic job-listing service to give thousands of employers and seekers access to hundreds of thousands of electrical, electronics and computer engineers and computer scientists.

For a \$10 to \$15 fee, employers and placement services can list job openings on the Internet via regional or national autoreponse files posted by IEEE-USA. The service is free to all job seekers who have access to the Internet.

To gain access to the service, job seekers must send an E-mail message to the designated Internet address. The requested files will automatically return to the individual's E-mail address. Job listings will be updated monthly.

For more information, contact William R. Anderson, IEEE-USA, 1828 L St. N.W., Suite 1202, Washington, D.C. 20036, (202) 785-0017, fax (202) 785-0035 or via the Internet at wranderson@ieee.org.

All client-server tools promise you object orientation, a nice GUI, faster development cycles and, of course, faster application run times.

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your forms or their constituent objects are revised, data locations are changed or business rules are modified, and all of your applications are automatically updated.

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THE GHOST OF IS FUTURE

BY ROCHELLE GARNER

Disposable systems? Disposable people? Widespread end-user programming?

Leilani Allen, the head of IS at PNC Mortgage, has seen the future, and it doesn't look friendly

The topic had seemed straightforward enough: Cost accounting and chargebacks in the year 2000. But as usual, Leilani Allen managed to stun her audience, which had assembled for a conference of data processing financial managers.

Her message: You're all doomed. Your jobs will have no reason to exist.

Hends swivelled to hear better. Disbelief passed over the audience like a shock wave. Heads shot into the air to question her assumptions.

Given the subject matter, her talk went surprisingly well.

The senior vice president of information technology at PNC Mortgage Corp. of America in Vernon Hills, Ill., Allen, 44, can leave a lasting impression. She is technically astute and business-savvy. But she also possesses a bluntness that many find disquieting.

But get over it, advises Jim Dowell, PNC's second vice president of network operations. "Pay attention to what she's saying because in 10 years she'll be running the world."

"Leilani has the amazing ability to decipher the right thing to do even if that solution is politically inexpedient or rubs people the wrong way," says Dave Vincent, president of management consulting firm The Information Group, Inc. and Allen's former boss at software house Boske & Babbage. "I cannot remember a single idea of hers that hasn't worked out."

What Allen is saying is likely to be unpopular — like her views on disposable systems:

"We are moving to client/server to bring flexibility to the creation and design of systems," Allen explains. "Logically, then, we should build systems that meet a business need and scrap them when that need changes. If you accept that, you realize it has tremendous ramifications in how we invest in technology." Or her view that chargebacks are obsolete:

"Chargebacks are based on mainframe technology. But in the client/server world, you don't know where a transaction is at any time: at the client? at the server? What's more, few chargeback algorithms even deal with PC technology."

And most frightening of all, accept that

your old skills are worthless or die:

"I took a copy of *Computerworld* to my staff meeting and said, 'You guys read the want ads? Well, I do, and none of you qualify for any of these,'" Allen says.

Dowell was there. "That the guys looked like they'd been hit with a two-by-four, and the other half realized that if they stayed with the old mainframe technology, they were indeed disposable."

Allen's point: Stay ahead of your discipline. Today, that means learning all there is to know about client/server in order to deal with it. "My attitude is, quit fidgeting around with arguments against client/server. Realize that this is reality, and ask yourself how to proactively deal with it," she says.

Her ideas are shaking up PNC: Prepare for disposable systems; throw away the old chargeback and capacity planning paradigms; keep core information technology competencies for your group and let others handle the rest.

Allen says certain skill sets, such as operations systems support and developing strategic applications, will never become part of responsibility of the user community. But information systems should let users build nonstrategic applications.

"On the other hand, our job is to say what the user can and should do, and we will create models to let them do it. That aligns the organization for change. Let the accountants create an application for new tax laws, as long as they follow the disciplines we lay out, the architecture, the roadways and security guards. All of that has to stay within [information technology], driven by a stated vision of the company and the technology."

NO STRANGER TO CHANGE

Obviously, this CIO embraces change. Considering Allen's upbringing, "anything else would be surprising. As my aunt, she attended eight elementary schools and four high schools in Europe, the Far East and California. She received her bachelor's and master's degrees in international relations and her doctorate in comparative politics. Why politics? Because nothing ever stays the same."

"When I was in school, I hated computers and computer people," Allen says. "I wondered why anyone would ever do this. It wasn't until I took a part-time job at Visa and saw how computers could transform the workplace that I took to technology."

Allen has also moved around profes-

sionally. She worked for a variety of companies, in a variety of functions, from capacity planning and performance management to technical support and system development. That background has given her a keen sense of business needs.

"Reinforce management views [Allen] as a visionary technologist," Dowell says. "And I would humbly submit that it is not how people viewed the head of [information technology] before her arrival."

FUTURE IS NOW

Right now, Allen is priming PNC to pursue the goal of disposable systems.

Information technology "has a tendency to build for eternity," Allen says. "The problem is, our monument can become a grave stone. Businesses now change constantly. And if they want to change every nine months, systems can't be the factor that keeps them from changing."

"It's the issue of flexibility," she says. "How quickly can we bring a product to market? Get into a new business? We have to have an architecture in place where the answer is 'pretty damn quick'."

Her plan: make information technology strategic and relinquish the tactical to the user community. The first step? Install this year the networking and operations infrastructure, which will become the foundation for next year's software directions. Dowell's group is busy installing the hardware as well as everything having to do with security, network monitoring, disaster recovery and support. In the meantime, another team is laying out how PNC will move its applications from the mainframe. The target date to complete that process is one year.

"It's my belief that people go about client/server backwards — first building applications," Allen says. "You have to deal with the operations issues as you are doing application development. The reason is you have to look at the network, the traffic and how to build the client/server system all at the same time."

The result: core people, adept at core skills, shaping strategic efforts — just the way IS is supposed to work.

In Allen's vision of the future, the only job security is to be the best at what you do yet still be willing to discuss what you know so well. To do otherwise makes you a disposable person.

"This is not a far future. But it is a truth," she says.

Garner is a free-lance writer in San Carlos, Calif.



"I took a copy of *Computerworld* to my staff meeting and said, 'You guys read the want ads? Well, I do, and none of you qualify for any of these.'"

Calendar

SEPT. 4-10

Windows Solutions Conference & Exposition. San Francisco, Sept. 7-8 — Keynotes: Roger Heinen, senior vice president of Microsoft Corp., a developer's diskette; Lee Hwang, president of IBM's Personal Software Products division; and Robert McDowell, vice president of Microsoft Strategic Enterprise Services. Contact: Ziff-Davis Exposition and Conference Co., Foster City, Calif. (415) 578-8800

Manufacturing '94. Chicago, Sept. 7-14 — Topics include networking, cost-cutting, quality improvement and technology integration. Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1700

Video Expo/Image World. New York, Sept. 10-14 — Seminars on emerging technologies, desktop video, computer graphics and animation, corporate video production, multimedia and digital imaging and publishing. Keynotes include: "Beyond Reality — New Frontiers in Computing Imaging" by Abby Ray Smith, co-founder and president of Altamira Software Corp., and "Non-Linear Editing — Cutting Through the Hype" by Shuman Norwalk, editorial director of *AV Video and Computer Pictures*. Contact: Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 329-0157

SEPT. 11-17

1994 International Client Forum. Orlando, Fla., Sept. 11-14 — Contact: Susan Spandora, Systems Software Associates, Inc., Chicago, Ill. (312) 641-0907

The 1994 International Communications Association's Management Institute. Evanston, Ill., Sept. 11-14 — Theme: "Technological Change: Strategies for Information Systems and Telecommunications." Contact: International Communications Association, Dallas, Texas (214) 233-3889

The Annual Energy and Technical Services Conference. Seattle, Sept. 11-14 — Keynote: "The Revolution of the Store Engineer Role" by David Freedman, senior vice president of corporate facilities and president of Giant Construction Co., a division of Giant Food, Inc. Contact: Road Marketing Institute, Washington, D.C. (202) 632-8444

Forum '94. Denver, Sept. 11-14 — Contact: Laurie Hatcher, Denver Storage Technology Corp., Denver, Colo. (303) 673-5324

Personal Communications Services (PCS) Auctions: Getting an Edge on the Competition. Washington, Sept. 12 — Focus: the Federal Communications Commission's broadband PCS auction rules; applying game theory principles to competitive bidding; strategies for cost-based bidding; opportunities for designated entities; and decision-support systems development. Contact: Telestrategies McLean, Va. (703) 734-7100

First Annual Conference on Cable TV. Washington, Sept. 12-13 — Focus: industry trends, opportunities, regulatory and financial opportunities and tech-

nological issues. Contact: Wanda Sapollano, Frost & Sullivan, New York, N.Y. (212) 904-7000

Smart Color '94. Stanford, Calif., Sept. 12-13 — Topics include overview of color engineering and standard device-independent color in operating systems; analysis and design of Smart Color sensors, monitors and printers; analysis

of color management systems; and ColorImage 2.0 workshop. Contact: Stanford University, Stanford, Calif. (415) 733-6272

Advanced Information Management Conference. San Francisco, Sept. 12-14 — Theme: Best-practice strategies for applying advanced technologies to building flexible architectures supporting business process re-engineering. Sponsor: Meta Group, Inc.'s Advanced Information Management Strategies Service. Contact: Meta Group, Westport, Conn. (203) 226-6392

Commercial Parallel Processing Conference. Chicago, Sept. 12-14 — Contact: CMP Trade Shows & Conference Services, Jericho, N.Y. (516) 733-6927

Electronic Commerce: Helping to Reinvent Government. Washington, Sept. 12-15 — Features seminars on technology applications and management issues and practical how-to ideas for government agencies and vendors. Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400



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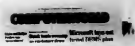
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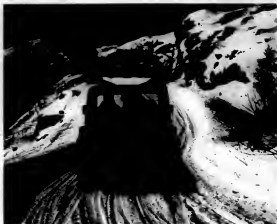
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In Depth

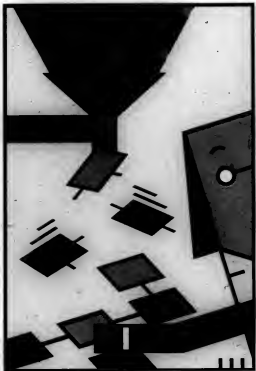
●REPLACING 1s and 0s with objects is easy. Mastering the mind-set for object-oriented programming is hard. Here to smooth your way is

THE OOP SURVIVAL GUIDE

So you've decided to abandon traditional application development methods and take on new object-oriented ways. Before you begin, bear in mind you're facing far more than a technical challenge. Once your developers master the programming skills and languages that object-oriented projects demand, you will need to create a workplace that will help them use those skills effectively.

By
CARL A.
ARGILA

That's not easy to do. You are likely to discover, just as Niccolo Machiavelli did, *"There is nothing more difficult to take in hand, more perilous to conduct or more uncertain in its success than to take the lead in the introduction of a new order of things."* To help you take the lead in the new object-oriented order of things, here's a 12-step survival guide.



STEP 1

Decide why you are making the move

THE KEY REASON TO INTRODUCE object-oriented programming (OOP) methods is to reduce the time it takes your development staff to create business applications over the long haul. At the heart of any OOP strategy is the reuse theory: The objects and systems designed for one application can be redeployed in new configurations for others. Bear in mind that you won't reap "reuse" benefits until the second or even third project. Once you have articulated this message to the development team, put it in writing. Make it no longer than one page.

OOP SURVIVAL GUIDE, page 92

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OOP SURVIVAL GUIDE, from page 39

STEP 1

Accept that the technology is here to stay

NOW THAT YOU ARE ADOPTING OOP methods, it's highly unlikely that you'll revert to traditional ones. Make sure your application developers know this. Because that may not go over well, I advise a gentle but firm approach. Don't dictate, "You shall use objects — or else." Instead, ask each programmer to generate a list of OOP pros and cons, then meet with each member individually to discuss items on their lists. Use this information to create well-balanced project teams, made up as evenly as possible of pro and con members. In other words, don't put all the negative people in one group. Address in a group meeting the top con items voiced by staff members.

STEP 2

Take stock of your assets

OOP REQUIRES SPECIFIC SKILLS. Which ones are available in your organization, which ones can your staff acquire through training and which ones do you need to bring in from outside? Know the answers to these questions before you replace your Cobol-proficient staff with an army of Smalltalk or C++ programmers. Your staff is likely to have a wealth of knowledge about the business units they serve. Their expertise in communicating with users and capturing business knowledge is crucial to the project's success; you may decide to keep them on board for that part of the process and outsource the actual programming effort.

STEP 3

Don't develop a full-scale pilot project

FULL-SCALE PILOT PROJECTS take a long time and can cost hundreds of thousands of dollars. If they fail, companies often abandon — for good — the very technology the pilot intended to promote.

To minimize the likelihood of that, set up what I call a "synbiojet." This minimalist project of sorts has a symbiotic relationship to an existing mission-critical application, such as a title and crew management system that could benefit from an object-oriented database. The database portion of the system could be spun off as a synbiojet. If the object-oriented project doesn't work the first time around, you can fall back on the existing relational database. The point: Choose a project that can fail without ruining the company.

STEP 4

Establish meaningful metrics

SUCCESSFUL PROJECTS are well-monitored. You need to measure the progress, quality and efficiency of your OOP project on a regular basis, then report back to those involved. Doing so helps spot trouble before it gets out of hand. Steady progress reports boost morale.

There are many ways to measure progress. One project manager I know established a metric based on the number of compiler invocations per person, per module and per unit of time. As the staff develops a module and the module nears completion, this metric should approach zero, and modules that don't conform to this pattern should be singled out for attention. Note that you have to use metrics carefully, making sure you monitor the right things. For instance, using the metric described above to check on attendance would destroy its value, not to mention demoralize your staff.

STEP 5

Expect resistance to change

IN REPLACING OLD DEVELOPMENT METHODS with new ones, you are likely to encounter all manner of behaviors.

Expect to see "creative avoidance." I.e., "We can't do this. We don't have the right CASE tool, the right methodology." In some cases, a coalition will form with a mission to identify that perfect tool or flawless methodology. Be aware this may be a stalling technique. Another strategy: "malicious compliance." I.e., "You want objects, I'll give you objects." In this insidious game, players work to make the project fail, taking every instruction literally and looking for loopholes.

Note that creative workers are usually well-intentioned. Training will increase their comfort levels. As for the others, just hope their behavior stops.

STEP 6

Focus on object-oriented programming alone

DON'T INTRODUCE OTHER TECHNOLOGIES at the same time you implement OOP. Doing so is asking for trouble.

A few years back, one of my clients made this mistake. In launching a major telecommunications project, it mandated the use of computer-aided software engineering (CASE) tools for application development. Simultaneously, it switched from Cobol to C++ and from a mainframe to a Unix platform, replacing a single processor with a client/server network. The project failed. The compiler wasn't working. There was a problem with the client/server transaction processing system. The reasons were endless, and all legitimate. If it's imperative — and sometimes it is — to introduce two technologies simultaneously, run concurrent pilots. Integrate them only after you understand and both thoroughly.

STEP 7

Solicit advice from experienced veterans

WHILE IT'S TRUE THAT companies have just begun to take advantage of object-oriented technology (see chart at right), that's no excuse for wandering aimlessly through uncharted territory. Training programs and seminars devoted to the topic are full of people who may have already solved the problems you are facing. Network with them. Join discussion groups on the Internet. Call your local IS association. Contact your vendor. There's help out there, and you have to look for it. The point is this: Learn lessons from those who have completed successful OOP development efforts.

STEP 8

Create your information model with care

AT THE OUTSET OF THE PROJECT, you need to create an information model, which will establish a basic set of objects on which to base future systems. It's critical to get the model right. The following story illustrates why:

A European country replaced a legacy system designed to track government benefits with an object-oriented application. The programmers identified object classes with names such as "pension" and "beneficiary." The system worked well until it was time to update the "legislative rules" embedded throughout. Programmers had never created a legislative rules object class. So instead of issuing one command to perform a global update, they had to change each one step by step. That defeats the point of OOP.

STEP 9

Specify a timeframe and stick to it

THE PROJECT DELIVERED DATE never slips. Period. If it does, the technology you are trying to promote will be deemed a failure. If you can't meet the deadline you have established, reduce the scope of the project. That may mean reducing, limiting or restricting the scope of the features offered. The important thing is to deliver the critical pieces on time.

Getting the first project out when promised is a real morale booster and will serve you well in the long run. Remember your long-term goal is to develop all your applications using object-oriented methods.

Looking Ahead: Object-Oriented Programming

1982 1987

- Applications based on Microsoft's Object Linking and Embedding appear.
- Visual Basic is the most common development environment for object-oriented programming.

1991 1993

- Wide use of OOP begins.
- Systems integrators deliver applications based on the technology.
- IS departments begin to coalesce OOP projects.

1996 1999

- Object infrastructure appears.
- OOP is commonplace.



Source: Microsoft Research, Inc., Cambridge, Mass.

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Promote the new culture you have built

NOW IS THE TIME to establish the basic mechanism for reusing objects in your next programming effort in your organization. To be truly effective, that effort needs to be coordinated at the corporate level. It doesn't begin so much with reusing the objects your programmers have developed as with the corporate commitment to continue using object-oriented technology.

How do you make this happen? One data services company, for instance, instituted a program in which developers receive a one-time financial reward when the company accepts a given object in its reuse library. They receive royalties, when other developers reuse their objects in other projects. This way, reuse has become part of the company's culture.

Conduct a postmortem

ASK YOUR TEAM: What went right? What went wrong? What should be done differently next time?

You may discover that your software development team needs to be organized differently. You may find, for instance, that it makes sense to split into two groups: object builders and system builders. The first creates individual objects. They are programmers at heart. They may not care how those objects are ultimately used, but they love a technical challenge.

System builders, on the other hand, thrive on understanding the business processes and assembling collaborations of objects that build systems to serve the business well.

You will no doubt also find that your comfort level with object-oriented technology has grown enormously. That, more than anything, should encourage reuse and help generate the productivity gains the technology is designed to promote. ■

Arght is a software engineering consultant in Pico Rivera. Call. He offers consulting and training services in systems analysis and design, development methodologies, project management and computer-aided software engineering. He can be reached at (800) 547-6963 or on the Internet at aright@earthlink.net

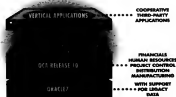


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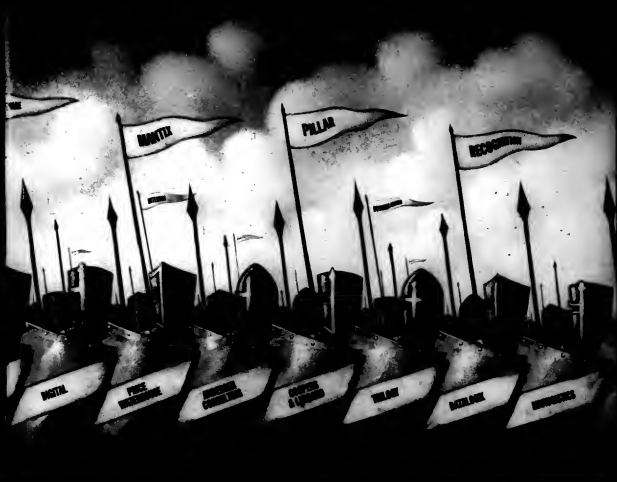
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SECRETS OF SUPPORT SUCCESS

Cross-training, recentralizing and using departmental liaisons are among the staffing strategies of a mixed environment

By Leslie Goff

Satisfying user needs with limited resources is a challenge in a mixed computing environment. Support pros must be willing to juggle responsibilities while learning new skills on the fly—particularly in OS/2 and Unix shops where a cacophony of other platforms can exist side by side.

Solutions for achieving the required skills to support mixed environments are highly individualized, as shown by the following three sites. But the lesson is the same: Do more with less.

Glaxo moves to Windows

When Glaxo, Inc.'s OS/2 server environment became difficult to support and the industry took a turn in another direction, the company began a move to a Windows-based distributed environment.

Its end-user support staff of approximately 30 people is responsible for more than 3,000 Windows workstations. In turn, Walter Turyn, a principal consultant/information technology architect, works with support staff to identify cross-training opportunities. Turyn's goal: to leverage existing skills and create expertise in new operating systems.

For example, VMS experts have taken Microsoft Corp. Windows NT classes because the operating systems share similar file structures and design features.

"Each requires the same kind of thinking and approach, which is a key component of any of the cross-training that we need to do," Turyn says.

In addition, Glaxo trained its MS-DOS

support staffers in IBM's OS/2 and later cross-trained OS/2 support staff in Windows NT. To develop Unix expertise, Glaxo cross-trained its midrange support staff vertically: MVS staffers learned AIX, VMS staffers learned OS/390, and MPE staffers learned HP/UX. "There seems to be a brand-name loyalty among those folks," Turyn says. "That's a curious thing; I don't know if it's justifiable or just comfortable."

While the company had some success growing in-house Unix expertise, Turyn says he ultimately hired two new staffers for their Unix backgrounds. He also constructed out VAX service and support two years ago, freeing his staff to concentrate on newer platforms.

Turyn estimates that Glaxo spends \$1,500 to \$2,000 per person per year on training and has about 10 different staffers in training at any given time. He notes, "That's not a huge amount compared with the return on the investment or with the cost of hiring someone new."

River Authority changes flow

When the Lower Colorado River Authority began migrating its users to a common graphical user interface two years ago, it wanted to step up service and support with key information systems liaisons in every unit. It would operate the

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Computer Careers

right questions," Thomas says.

Thomas recently added another permanent position in anticipation of new Sysbase, Inc. applications and a Unix-based geographical information system that is expected this fall. She chose a candidate who is getting a master's degree in applied geography and had OS/2, Unix and Windows skills as

well as experience working directly for an end-user department.

With an eye on being as proactive as possible among the authority's 1,200 users, Thomas has offered free training to low-level departmental employees who want to take on basic user support responsibilities; has maintained a fifth help desk position that rotates among the desk and various end-user sites; has designated a customer service team leader; and has employed three full-time end-user trainers.

In the face of limited support funding, Thomas retains a minimum service level: "If we can't fix it in 30 minutes, we outsource it to an on-site service provider."

University of S.C.'s creativity
With a core IS staff of 12 serving thousands of students, faculty and staff, the University of South Carolina employs the same staff members to handle support, training, applications development and

systems administration.

In fact, the support staff relies heavily on creativity and self-motivation to develop flexible, ad hoc support measures. "We've all been here a long time, so we have our own specialties," says Eddie King, a network engineer at the College of Humanities and Social Sciences. "We cross over into other technologies."

For example, King's official responsibility is to manage the network, but he also supports OS/2 and Macintosh applications. Similarly, the mainframe database administrator has become the multimedia application expert and the electronic-mail postmaster is charged with sta-

demie departments to employ a local support liaison and relies on a help desk staffed by work-study students and interns in field questions.

Help desk staffers, known as student consultants, "learn by fire hose," King notes, but usually come on board with a good background in productivity applications. Each person has an OS/2 workstation to access remote workstations running OS/2, DOS/Windows or Unix.

The biggest challenge in a mixed environment is knowing where one system ends and another begins. "Because of the multiple personality of their OS/2 workstations, sometimes it's difficult for an

inexperienced support person to identify which platform the problem exists on," King says.

And while technical specialties are essential, more important are "foolishness, logical thinking and a great deal of curiosity," King says. The environment changes so rapidly that we often can't deal with support issues on a formal level. In such a dynamic environment, the ability to extrapolate from what you've done in the past is more important than what you've actually done."

Goff is a free-lance writer in New York.

company's LAN servers, while the units, each with its own dedicated IS person, would assume responsibility for workstations and applications. The IS person would become a business-area expert.

However, the agency, which provides electricity and oversees conservation of the lower Colorado River, has had to re-centralize its support staff.

"Funding forced us to pull back," says Carol Thomas, manager of end-user computing. "Instead of providing proactive, over-the-top-of-the-cubicle support, we're waiting until something goes wrong and someone calls the helpdesk."

Consequently, Thomas created a help desk staff that possesses technical finesse. But more importantly, it's steeped in phone support experience.

"They must have the intuition to ask, 'Have you changed anything on your PC lately?' or 'What happened last time you did this?' They must have a fifth sense that will prompt them to ask users the

statistical applications. "All of our staff are available for support," King says, "but we have other things going on, so we can't just answer everyone's questions at a moment's notice."

To wit, the staff requires larger ac-

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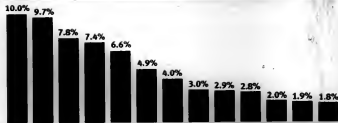
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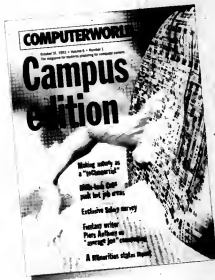
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Planned Editorial Features:

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- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
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Chargeback not ready for client/server

Currently, there are no robust chargeback tools for the distributed computing world. Existing programs lack the ability to track client/server's biggest expense - personnel.

By Paul Karen

While many powerful applications have made the transition to distributed platforms, chargeback systems critical to cost-tracking for the mainframe environment have been slow to migrate.

Why? It's a matter of simple economics. The less expensive the hardware processing power, the less critical it is to track the percentages of resources given to each user. That's one reason distributed solutions are installed in the first place. They're cheaper.

Cost displacement

But just because the hardware is cheaper doesn't mean distributed computing is cheaper. The costs simply show up in other places. "When [information systems] departments are making the transition from mainframes to distributed architectures, they don't realize that managing these environments is three to

six times more expensive than in a centralized mainframe environment," says Bradley Hecht, a research analyst at Gartner Group, Inc. in Stamford, Conn.

Unlike in client/server, usage-based chargeback works well in traditional data centers where the lion's share of costs go toward expensive mainframe hardware and software. "The labor involved in client/server systems is what really runs up the bill, but IS people are not well equipped to capture these costs," says Jim House, senior editor of the newsletter "Client/Server" and

"Open Systems" at Computer Economics, Inc., a research and consulting firm in Carlebad, Calif.

Slow ride

In fact, IS managers who have moved to client/server have found no easy technological fix for the human factor of support costs. "In distributed environments, hidden costs such as customizing software, script writing, retraining and configuring systems account for something like 75% to 80% of the cost of implementation," Hecht says.

House estimates those costs to be slightly lower, at around 60%, but that's still a long way from mainframe systems.

Nevertheless, chargeback is slowly entering distributed computing, and it's the larger shops that are more likely to realize savings. "If you spend \$20,000 to \$30,000 on a piece of hardware, you're not going to spend \$5,000 on chargeback software," says Ken Leoni, director of sales at Computer Information Systems,

Inc., a chargeback software vendor in Newton, Mass.

For medium and small installations as well as big ticket shops, chargeback software is most useful as a resource planning tool. It shows where IS capacity is challenged and where resources should be expanded, Leoni says.

Long way off

The problem with most chargeback packages for distributed systems is that they target particular proprietary environments, such as VMS, Hewlett-Packard Co.'s HP/UX or IBM's AIX. For highly mixed environments, the current tools just aren't comprehensive enough.

Primary elements monitored are disk space usage, CPU runtime and print queuing. Others might include I/O to disk, memory usage, batch vs. interactive usage and comparative rates for the times of day the system is used.

If you want a single package that not only keeps track of basic usage factors but also measures demand on individual applications running on the servers, don't hold your breath. Chargeback packages provide system-level information but typically cannot see into individual applications to measure, for example, the extent to which users query a corporate database. That kind of information must be provided in concert with application software.

"No matter what vendors claim, there are no real robust tools today to do chargeback in the distributed computing world," Hecht says. "Users want to get granular information, right down to the node. That's ideal, but we're a long way from that."

Karen is a free-lance writer in Los Angeles.

Billing Alternative

One of the most talked-about solutions to the chargeback problem in distributed environments is decidedly "no-tech."

Often referred to as the "cable TV model," it's a method whereby IS departments create shared pricing structures for equipment and services. By keeping support in the chargeback fees, this method reflects an IS department's real costs more accurately than a strict, machine-based chargeback system that looks only at CPU cycles and disk space.

Under the cable TV approach, users can choose support plans that bundle together different allocations of service and equipment into two or three tiers.

A standard-level service tier may include workstation installation and network connection along with basic training and support. A more expensive premium tier may add advanced levels of training and support and custom application development.

In fact, this approach may become more important than simple charge-

back metrics. "None of this [chargeback] stuff is really rocket-science code," says Chuck Sears, director of sales at Uniflex Software, Inc. in Sunnyvale, Calif. "The challenge is in the [computer] trying to get their arms around how they want to charge and bill for this."

- Paul Karen

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Fraser Computer Systems Inc.	17.3	Protek Technology	-82.0
GenCorp	17.8	Micro Motion	-121.1
Continuum Communications	14.6	Savoy Inc., Corp. N.Y.	-10.7
Autostar Inc.	14.0	Ross Systems	-50.0

Dollar

Aurionyx Inc.	7.13	BlackHawk	-1.89
2 CDM Corp.	6.75	Blackburn Corp.	-1.98
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Semiconductor market share

You've read about the U.S. and Japanese fight for worldwide semiconductor market share and the summer drop in U.S. book-to-bill ratio. And you might even be concerned that Intel Corp. (INTC) is going to get trounced by the PowerPC. What's an investor to do?

"People worry too much about the book-to-bill ratio," Klesken said. "It has always been cyclical. As long as both

U.S. companies' knack for business and appreciation for customers are their real strengths. "The Japanese are starting to model themselves after American companies. But they did this in by trying to obtain market share at any cost," Kleske said.

Paul Plansky, vice president at HTE Research, Inc. in southern San Francisco and editor in chief of the "Semiconductor Industry & Business Survey," agreed that growth is certain. "Networking, telecommunications and consumer electronics are all huge growth segments," Plansky said.

Despite PowerPC hype, there is more to this market. "PCs represent only 25% of all chip sales," Plansky said. "That leaves 75% of a market and a whole lot of products."

Still, if investors need reassurance about Intel, it isn't hard to find. "The Pentium is selling for 40% less than the 486 did four years ago, and Intel's cost is continually declining. Plus, they'll be shipping 30 to 40 times more Pentiums than 486s so they're going to accrue at least that in revenue," Kleckner said.

In the end, Intel is a veteran in a market that is churning up lots of opportunities. "They are making deals with all the right people," Piansky said. "No matter what horse gets up and running, Intel will be on it."

—Erin Callan Moore

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Company		1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	99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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

OTC	3.70	2.47	ARMARCADE CO INC, RICHMOND	4.25	0.75	-6.5
OTC	90.50	22.80	ROPER CONSTRUCTION INC	34.50	-42.50	-67.5
OTC	11.00	7.50	ROST INDUST INC	17.00	-0.43	-1.5
OTC	1.00	0.50	SAUNDERS CO INC, COVINGTON	1.00	0.00	0.0
OTC	34.00	15.25	SLAY COMPANY INC, OREM	21.00	1.50	-4.0
OTC	25.00	9.73	STANLEY 2000 INC	71.00	-0.21	-0.6
OTC	973.42	66.58	STANLEY PAPER PRODUCTS CO	807.75	0.00	7.4
NYSE	22.00	18.00	STON-ING CORP	21.75	0.00	0.0
OTC	11.18	16.25	STON-ING CORP	26.00	0.00	0.0
OTC	1.00	0.50	STON-ING CORP	29.00	0.75	1.5
OTC	3.13	1.19	SUNBELT INDUSTRIES INC	3.63	0.00	0.0

Journal of Management Education

[illegible]

Background

[illegible][illegible]

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

		Year		Company	
1978	1979	1978	1979	1978	1979
58-27	2-7	Kaiser-Alumina Refractories Inc.	7,681	8,221	4.5
58-28	1-1	Kimberly-Clark Corp.	11,350	11,463	0.9
58-29	1-1	Kimberly-Clark Corp.	4,838	4,880	0.8
58-30	1-1	Kingsport Chemicals Inc. (Kingsport Chemicals)	1,000	1,000	0.0
59-1	6-16	Kaiser Aluminum Corp.	5,906	6,245	5.7
59-2	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-3	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-4	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-5	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-6	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-7	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-8	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-9	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-10	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-11	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-12	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-13	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-14	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-15	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-16	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-17	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-18	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-19	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-20	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-21	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-22	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-23	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-24	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-25	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-26	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-27	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-28	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-29	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-30	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-31	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-32	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-33	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-34	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-35	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-36	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-37	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-38	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-39	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-40	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-41	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-42	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-43	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-44	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-45	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-46	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-47	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-48	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-49	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-50	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-51	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-52	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-53	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-54	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-55	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-56	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-57	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-58	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-59	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-60	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-61	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-62	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-63	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-64	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-65	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-66	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-67	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-68	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-69	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-70	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-71	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-72	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-73	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-74	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-75	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-76	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-77	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-78	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-79	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-80	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-81	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-82	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-83	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-84	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-85	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-86	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-87	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-88	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-89	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-90	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-91	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-92	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-93	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-94	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-95	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-96	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-97	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-98	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-99	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0
59-100	6-16	Kaiser Aluminum Corp.	1,000	1,000	0.0

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1979	USA	20,560	607.21
1979	FRG	1,586	48.98
1979	UK	6	0.17
1979	USSR	6	0.17
1979	Canada	1,586	48.98
1979	Japan	1,586	48.98
1979	Italy	1,586	48.98
1979	France	1,586	48.98
1979	Sweden	1,586	48.98
1979	Belgium	1,586	48.98
1979	Netherlands	1,586	48.98
1979	West Germany	1,586	48.98
1979	Spain	1,586	48.98
1979	Portugal	1,586	48.98
1979	Greece	1,586	48.98
1979	Ireland	1,586	48.98
1979	Denmark	1,586	48.98
1979	Finland	1,586	48.98
1979	Norway	1,586	48.98
1979	Switzerland	1,586	48.98
1979	Austria	1,586	48.98
1979	Luxembourg	1,586	48.98
1979	Belgium-Luxembourg	1,586	48.98
1979	France-Germany	1,586	48.98
1979	Italy-Germany	1,586	48.98
1979	Spain-Germany	1,586	48.98
1979	Portugal-Germany	1,586	48.98
1979	Greece-Germany	1,586	48.98
1979	Ireland-Germany	1,586	48.98
1979	Denmark-Germany	1,586	48.98
1979	Finland-Germany	1,586	48.98
1979	Norway-Germany	1,586	48.98
1979	Switzerland-Germany	1,586	48.98
1979	Austria-Germany	1,586	48.98
1979	Luxembourg-Germany	1,586	48.98
1979	Belgium-Luxembourg-Germany	1,586	48.98
1979	France-Germany-Italy	1,586	48.98
1979	Italy-Germany-France	1,586	48.98
1979	Spain-Germany-France	1,586	48.98
1979	Portugal-Germany-France	1,586	48.98
1979	Greece-Germany-France	1,586	48.98
1979	Ireland-Germany-France	1,586	48.98
1979	Denmark-Germany-France	1,586	48.98
1979	Finland-Germany-France	1,586	48.98
1979	Norway-Germany-France	1,586	48.98
1979	Switzerland-Germany-France	1,586	48.98
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1979	Belgium-Luxembourg-Germany-France	1,586	48.98
1979	France-Germany-Italy-Spain	1,586	48.98
1979	Italy-Germany-France-Spain	1,586	48.98
1979	Spain-Germany-France-Italy	1,586	48.98
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1979	Italy-Germany-France-Spain-Portugal	1,586	48.98
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1979	Italy-Germany-France-Spain-Portugal-Greece	1,586	48.98
1979	Spain-Germany-France-Italy-Portugal-Greece	1,586	48.98
1979	Portugal-Germany-France-Italy-Spain-Greece	1,586	48.98
1979	Greece-Germany-France-Italy-Spain-Portugal	1,586	48.98
1979	Ireland-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Denmark-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Finland-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Norway-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Switzerland-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Austria-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Luxembourg-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98
1979	Belgium-Luxembourg-Germany-France-Italy-Spain-Portugal-Greece	1,586	48.98

Paraphernalia and Signs

2006	17.2	2007	15.2	2008	15.0	2009	14.8	2010	14.8	2011	14.8	2012	14.8	2013	14.8	2014	14.8	2015	14.8	2016	14.8	2017	14.8	2018	14.8	2019	14.8	2020	14.8	2021	14.8	2022	14.8	2023	14.8	2024	14.8	2025	14.8	2026	14.8	2027	14.8	2028	14.8	2029	14.8	2030	14.8	2031	14.8	2032	14.8	2033	14.8	2034	14.8	2035	14.8	2036	14.8	2037	14.8	2038	14.8	2039	14.8	2040	14.8	2041	14.8	2042	14.8	2043	14.8	2044	14.8	2045	14.8	2046	14.8	2047	14.8	2048	14.8	2049	14.8	2050	14.8	2051	14.8	2052	14.8	2053	14.8	2054	14.8	2055	14.8	2056	14.8	2057	14.8	2058	14.8	2059	14.8	2060	14.8	2061	14.8	2062	14.8	2063	14.8	2064	14.8	2065	14.8	2066	14.8	2067	14.8	2068	14.8	2069	14.8	2070	14.8	2071	14.8	2072	14.8	2073	14.8	2074	14.8	2075	14.8	2076	14.8	2077	14.8	2078	14.8	2079	14.8	2080	14.8	2081	14.8	2082	14.8	2083	14.8	2084	14.8	2085	14.8	2086	14.8	2087	14.8	2088	14.8	2089	14.8	2090	14.8	2091	14.8	2092	14.8	2093	14.8	2094	14.8	2095	14.8	2096	14.8	2097	14.8	2098	14.8	2099	14.8	2100	14.8	2101	14.8	2102	14.8	2103	14.8	2104	14.8	2105	14.8	2106	14.8	2107	14.8	2108	14.8	2109	14.8	2110	14.8	2111	14.8	2112	14.8	2113	14.8	2114	14.8	2115	14.8	2116	14.8	2117	14.8	2118	14.8	2119	14.8	2120	14.8	2121	14.8	2122	14.8	2123	14.8	2124	14.8	2125	14.8	2126	14.8	2127	14.8	2128	14.8	2129	14.8	2130	14.8	2131	14.8	2132	14.8	2133	14.8	2134	14.8	2135	14.8	2136	14.8	2137	14.8	2138	14.8	2139	14.8	2140	14.8	2141	14.8	2142	14.8	2143	14.8	2144	14.8	2145	14.8	2146	14.8	2147	14.8	2148	14.8	2149	14.8	2150	14.8	2151	14.8	2152	14.8	2153	14.8	2154	14.8	2155	14.8	2156	14.8	2157	14.8	2158	14.8	2159	14.8	2160	14.8	2161	14.8	2162	14.8	2163	14.8	2164	14.8	2165	14.8	2166	14.8	2167	14.8	2168	14.8	2169	14.8	2170	14.8	2171	14.8	2172	14.8	2173	14.8	2174	14.8	2175	14.8	2176	14.8	2177	14.8	2178	14.8	2179	14.8	2180	14.8	2181	14.8	2182	14.8	2183	14.8	2184	14.8	2185	14.8	2186	14.8	2187	14.8	2188	14.8	2189	14.8	2190	14.8	2191	14.8	2192	14.8	2193	14.8	2194	14.8	2195	14.8	2196	14.8	2197	14.8	2198	14.8	2199	14.8	2200	14.8	2201	14.8	2202	14.8	2203	14.8	2204	14.8	2205	14.8	2206	14.8	2207	14.8	2208	14.8	2209	14.8	2210	14.8	2211	14.8	2212	14.8	2213	14.8	2214	14.8	2215	14.8	2216	14.8	2217	14.8	2218	14.8	2219	14.8	2220	14.8	2221	14.8	2222	14.8	2223	14.8	2224	14.8	2225	14.8	2226	14.8	2227	14.8	2228	14.8	2229	14.8	2230	14.8	2231	14.8	2232	14.8	2233	14.8	2234	14.8	2235	14.8	2236	14.8	2237	14.8	2238	14.8	2239	14.8	2240	14.8	2241	14.8	2242	14.8	2243	14.8	2244	14.8	2245	14.8	2246	14.8	2247	14.8	2248	14.8	2249	14.8	2250	14.8	2251	14.8	2252	14.8	2253	14.8	2254	14.8	2255	14.8	2256	14.8	2257	14.8	2258	14.8	2259	14.8	2260	14.8	2261	14.8	2262	14.8	2263	14.8	2264	14.8	2265	14.8	2266	14.8	2267	14.8	2268	14.8	2269	14.8	2270	14.8	2271	14.8	2272	14.8	2273	14.8	2274	14.8	2275	14.8	2276	14.8	2277	14.8	2278	14.8	2279	14.8	2280	14.8	2281	14.8	2282	14.8	2283	14.8	2284	14.8	2285	14.8	2286	14.8	2287	14.8	2288	14.8	2289	14.8	2290	14.8	2291	14.8	2292	14.8	2293	14.8	2294	14.8	2295	14.8	2296	14.8	2297	14.8	2298	14.8	2299	14.8	2300	14.8	2301	14.8	2302	14.8	2303	14.8	2304	14.8	2305	14.8	2306	14.8	2307	14.8	2308	14.8	2309	14.8	2310	14.8	2311	14.8	2312	14.8	2313	14.8	2314	14.8	2315	14.8	2316	14.8	2317	14.8	2318	14.8	2319	14.8	2320	14.8	2321	14.8	2322	14.8	2323	14.8	2324	14.8	2325	14.8	2326	14.8	2327	14.8	2328	14.8	2329	14.8	2330	14.8	2331	14.8	2332	14.8	2333	14.8	2334	14.8	2335	14.8	2336	14.8	2337	14.8	2338	14.8	2339	14.8	2340	14.8	2341	14.8	2342	14.8	2343	14.8	2344	14.8	2345	14.8	2346	14.8	2347	14.8	2348	14.8	2349	14.8	2350	14.8	2351	14.8	2352	14.8	2353	14.8	2354	14.8	2355	14.8	2356	14.8	2357	14.8	2358	14.8	2359	14.8	2360	14.8	2361	14.8	2362	14.8	2363	14.8	2364	14.8	2365	14.8	2366	14.8	2367	14.8	2368	14.8	2369	14.8	2370	14.8	2371	14.8	2372	14.8	2373	14.8	2374	14.8	2375	14.8	2376	14.8	2377	14.8	2378	14.8	2379	14.8	2380	14.8	2381	14.8	2382	14.8	2383	14.8	2384	14.8	2385	14.8	2386	14.8	2387	14.8	2388	14.8	2389	14.8	2390	14.8	2391	14.8	2392	14.8	2393	14.8	2394	14.8	2395	14.8	2396	14.8	2397	14.8	2398	14.8	2399	14.8	2400	14.8	2401	14.8	2402	14.8	2403	14.8	2404	14.8	2405	14.8	2406	14.8	2407	14.8	2408	14.8	2409	14.8	2410	14.8	2411	14.8	2412	14.8	2413	14.8	2414	14.8	2415	14.8	2416	14.8	2417	14.8	2418	14.8	2419	14.8	2420	14.8	2421	14.8	2422	14.8	2423	14.8	2424	14.8	2425	14.8	2426	14.8	2427	14.8	2428	14.8	2429	14.8	2430	14.8	2431	14.8	2432	14.8	2433	14.8	2434	14.8	2435	14.8	2436	14.8	2437	14.8	2438	14.8	2439	14.8	2440	14.8	2441	14.8	2442	14.8	2443	14.8	2444	14.8	2445	14.8	2446	14.8	2447	14.8	2448	14.8	2449	14.8	2450	14.8	2451	14.8	2452	14.8	2453	14.8	2454	14.8	2455	14.8	2456	14.8	2457	14.8	2458	14.8	2459	14.8	2460	14.8	2461	14.8	2462	14.8	2463	14.8	2464	14.8	2465	14.8	2466	14.8	2467	14.8	2468	14.8	2469	14.8	2470	14.8	2471	14.8	2472	14.8	2473	14.8	2474	14.8	2475	14.8	2476	14.8	2477	14.8	2478	14.8	2479	14.8	2480	14.8	2481	14.8	2482	14.8	2483	14.8	2484	14.8	2485	14.8	2486	14.8	2487	14.8	2488	14.8	2489	14.8	2490	14.8	2491	14.8	2492	14.8	2493	14.8	2494	14.8	2495	14.8	2496	14.8	2497	14.8	2498	14.8	2499	14.8	2500	14.8
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[illegible][illegible]

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Chicago applet provides PC backup but little functionality

By Mary Brandle

Hewlett-Packard Co. last week said its Colorado Memory Systems Division is writing the backup applet that Microsoft Corp. will incorporate into its Chicago operating system.

However, the applet is intended only for backing up individual PCs. Functionality in "bare bones," according to a Colorado Memory spokesman. "Essentially, it hooks up the hard disk to any QIC tape drive," he said.

Because tapes adhering to the quarter-inch cartridge (QIC) format are the most prevalent among desktop users today, users of Windows 3.x, or Chicago, will be able to continue using their existing tapes. However, they will not be able to read Chicago tapes with Windows NT drives, or vice versa, because NT adheres to the Microsoft Tape Format (MTF).

Some say this is not a problem. Tape interchangeability is a big issue at the network level because it gives a lot more capability and security to the network administrator, said Michael Peterson, an analyst at Peripheral Strategies, Inc. in Santa Barbara, Calif. "On the desktop, I'm not sure it will be," he said.

Not good enough

"It's certainly a disadvantage," according to Houghton Lefloy, manager of intelligent manufacturing at The Fuchuro Co. in Fuchuro, Mass. "I would be very uncomfortable if I were being backup and couldn't move it to another platform."

Microsoft says it is more important for desktop users to continue using their existing tapes than to read NT drives. In addition, Rogers Weed, Chicago group manager at Microsoft, said that most Chicago desktops will not

be stand-alone but will be networked with an NT or Novell, Inc. NetWare server. In that case, they will be able to restore backed-up data across the network using built-in peer-to-peer services in NT and Chicago, despite the differences in tape formats.

In addition, users will be able to back up Chicago PCs to a server thanks to network agents built into Chicago by Cheyenne Software, Inc. and Arcadia Software, Inc.

"The really new [backup] feature in Chicago is the over-the-net agents," Weed said. The agents require no new client software, although users will have to upgrade the server software.

But "you don't always have the luxury of being on a network tonight," Lefloy said. Or "you may have a regional office where the network connection is so poor that it wouldn't make sense to transfer large amounts of data," in which case you would need to exchange tapes, he said.

It is likely that third-party backup software will solve the format dilemma. Arcadia said it plans to release full-format backup software for Chicago that will support MTF and thus allow users to restore Chicago tapes on NT machines.

Powersoft

CONTINUED FROM PAGE 1

[our customers] were crashing on a daily basis," said Tim Perkins, a consultant at a health care company in Phoenix. "Most frustrating to me is that it's so haphazard. There's no easy way to resolve some of these GPFs."

Powersoft President David Litwack responded that the company works aggressively to fix reported problems and puts out a monthly release for bug fixes.

"The vast majority of problems that are reported are related to things other than PowerBuilder," Litwack insisted.

Other company officials said the upcoming release of PowerBuilder 4.0 (CW, Aug. 15), which will be unveiled this week, will address many of the general protection fault (GPF) issues inherent in the current version.

Some problems with Windows

Some developers agreed that the bugs could not all be laid at Powersoft's door. "A lot of the problems we've been having are probably Windows-related. I'm a pretty big fan of Powersoft itself," said Ryan Westling, a program manager at GTE Corp., a telecommunications firm in Thousand Oaks, Calif. He said some experienced developers know how to "work around" the problems and cited ease of development and prototyping as key benefits to PowerBuilder.

When Windows makes system calls to the underlying DOS operating system, Windows applications can bump into another's memory space, causing a GPF and system crash that requires the user to reboot, said Rich Finkelstein, president of Performance Computing, Inc., a Chicago consulting firm. Chicago, Microsoft's 32-bit upgrade to Windows, will provide protected memory space to address these problems.

The issue with PowerBuilder, however,

is that GPFs occur with much greater frequency than with other Windows tools such as Microsoft's Visual Basic, Finkelstein said. He attributed this to PowerBuilder features that stretch the limit of what is possible under Windows, as well as an inappropriate design and a lack of thorough testing by Powersoft.

"You can't put certain solutions on a fundamentally unreliable platform," Finkelstein said.

In phone interviews last week, 10 other developers backed up contentions of PowerBuilder instability, saying they lose 10% to 20% of development time in tracking system crashes related to GPFs and then figuring out ways to work around them.

"I just about three weeks out of the last eight months," said Ross Santos, an independent consultant working at a managed health care organization in Sacramento, Calif. "We're working on the first mission-critical application for client/server for this organization."

Santos said he has had a work order with Powersoft's support group since spring that seeks to address some of the problems he encountered with GPFs. "The tools are wonderful that they give you, but they just haven't taken it far enough and cleaned them up," he said.

"It could become a real problem for them."

His organization hopes to run its PowerBuilder application across a wide-area network of 14 sites and 42 servers supporting 2,600 users.

"It's supposed to be a pretty mature product, and it does allow you to do things very quickly," said another developer at a health maintenance organization who asked not to be identified. "But you stand the risk of getting egg on your face if you promote a product to do mission-critical applications and then you get stung because of these problems for which you don't have an explanation."

Though seen ahead for object developers, See page 71.

Few mourn DOS

CONTINUED FROM PAGE 1

cause," he focused on Chicago," said Jeff Beyer, supervisor of the internal PC group at John Fluke Manufacturing, an electronic test equipment manufacturer in Everett, Wash.

Most new PC's ship with both Windows and DOS, and most people who have been purchasing MS-DOS by itself are Windows users, said Brad Chase, general manager of Microsoft's personal operating systems group.

Even the IBM PC Co. ships many of its PCs with Windows. "All of the IBM [PCs] we sell come with Windows, although we can order them with OS/2," said Ed Mahlum, co-owner of an IBM, Inc. computer store in Kalamazoo, Mich.

Additionally, Mahlum and other support professionals said they are looking forward to the demise of DOS because it will mean fewer systems to support. "Most of us doing tech support are looking forward to Chicago," said Mahlum, head of the store's technical sales support.

Despite such encouragement, Microsoft officials stopped short of confirming they will terminate DOS evolution. Instead they said if users demand it, they will release further updates, but that does not sound promising.

If people want the operating system features of Chicago without a GUI, we'll figure out how to detach the GUI," said Steve Ballmer, Microsoft executive vice president. "But they're not likely to want that."

Despite the fact that there are still millions of PCs in use that only run DOS, recent sales figures seem to confirm Microsoft's point. "Windows is so predominant in our customers' minds that you haven't had many requests for improvements in DOS," Chase claimed.

As for Novell, John Diamond, technical director of the Windows User Group Network in Media, Pa., said a lot of the message traffic he has read on-line shows that many users expect Novell to terminate its DOS operating system soon.

West Coast senior correspondent Mark Halper contributed to this report.

Can IBM move OS/2 at Warp speed? Page 39.

It DOS matter to some

Despite signs of waning interest in future versions of DOS, it will still have its place in the modern world.

For example, some users such as the U.S. Department of Defense, which has a large installed base of DOS-based machines, may still require upgrades of DOS driver devices to accommodate new devices, said Jerry Schneider, president of Schneider Associates, Inc., a Burke, Va., consultancy.

With such massive users, IBM may find a ready-made market, at least for now, for PC-DOS 7.0. The release, due out early next year, will feature a version of Workplace Shell, memory enhancements and Stacker data compression, an IBM spokesman said.

"It's unthinkable that the current release of DOS would be the last, so I think that's a great opportunity for IBM," said Priscilla Tate, executive director of Technology Managers Forum International in New York.

In fact, DOS may live on for two or more years, particularly if Chicago takes time to catch on. "It takes people a long time to change, so it might be a little too soon to pull the plug. And if they do, it opens up the door to IBM or someone else who wants to support it," said Cheryl Currid, president of Currid & Co., a Houston-based technology assessment firm.

—Stuart J. Johnson



ysiwyg



...don't write specifications.

Users should consider themselves lucky to get any program at all and take what they get.

...don't believe in schedules.

Managers make up schedules. Managers live up to schedules. Frustrated users strive to meet schedules. Real programmers ignore schedules.

...don't eat cheese.

Real programmers don't even know how to spell "cheese." They eat Twinkies. (Like and please—overlooking Newborn food.)

Source: A Summary of Thousands of User e-mails to the Internet



Pass me the dictionary

Once "network" passed out of the realm of computer jargon and into common English as a synonym for "communicate," it was only a matter of time before "Internet" did the same. When the towns of Richmond, Calif., passed a special amendment for school physical education — having open the budgeted money elsewhere — people were angered because the meeting was not well-publicized and was held where many people could not attend. One citizen complained that this prevented the townsfolk from "interconnecting" with one another.

Info to source: Applied Networks, 5000 14th St., Suite 400

Stupid Unix Tricks

At the Unix prompt #, type the following and Unix will supply the answer.

[Where is Jimmy Hoffa?

missing].

How did the sex change operation go?

modified failed

got a light?

no match

If I had a (for every 8 Congress spent, what would I have?

too many 's

man: What did you get a divorce?

man: too many arguments

Source: All examples
REPRODUCED BY THE COLLECTOR.
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Inside Lines

High on the hog at Borland

While Borland shareholders have watched their share value drop by more than half during the last year, Borland officers have sure been living well. According to Borland's most recent proxy statement, Chairman Philippe Kahn, who presided over Borland's decline, has been given options to buy more than \$20 million worth of stock. If Kahn were fired, Borland would continue to pay him his current salary of \$250,000 plus incentive compensation for three years. Former officers live well, too. Former CFO Allen Reinhardt, who resigned in April, will continue to receive his \$273,000 salary until Sept. 31. Continuing a Borland tradition, the vendor loaned its new chief operating officer, Keith Malt, more than \$1 million, at a 6.0% rate, to purchase a new home.

Bob and Larry's secret adventure

Digital and Oracle are holding their tongues, but word is out that the \$10 billion deal is signed and that Oracle has purchased the relational database. It sounds like a good deal for all. According to one source, Oracle had promised Wall Street higher margins, and Digital's high-end database would provide a nice dollop of profitable product to that end. Not to mention, the source said, "The chemistry works" between Oracle head honcho Larry Ellison and Digital chiefmate Bob Palmer.

AST me no questions

Watch out for new server announcements from AST Research during the NewWorld Interop show in Atlanta next month. According to sources close to the company, AST will announce a family of aggressively priced high-end servers based on Intel's i486 and Pentium processors. Sources say the company also plans to announce during the show new network management software, as part of its push into the enterprise arena.

First, the good news...

IBM has started promising specific delivery dates to customers who have ordered its new Rascal RAID-5 mainframe disk arrays, and the computer giant said it remains on track to begin volume shipments late next month. But there's a catch. Early demand for Rascal is higher than the company expected, leaving it with insufficient manufacturing capacity. So some orders will be filled later than customers had anticipated, IBM confirmed.

Wang heads for Bull's pastures

Wang is considering Bull's 300 Concord Road building in Billerica, Mass., as the stomping ground for its new headquarters, a Bull spokesman confirmed last week. Wang already sold the Towers, its monumental pile of buildings about a half-hour away in Lowell. Wang CEO Joseph Tuohy said the search was narrowed to three locations, all within 10 miles of the Towers. Why stay so close to home? Tuohy said he had a "personal commitment" to staying close to Lowell.

Subnotebooks go exotic

IBM PC Co. is preparing to launch subnotebooks for an October release, including its PowerPC notebook, updates for the 715 family and an exotic new subnotebook with built-in infrared communications. IBM also will start ramping up extra production from its Display Technologies venture and from Sharp and other screen suppliers in an all-out quest to clean up its bookings by year's end.

Lots of people are virtually married, but this weekend two people are doing it for real — so to speak. Monica Liston, 35, and Hugh J. Jr., 32, will don virtual reality headgear and send in "real time and virtual space" in San Francisco, with 300 guests watching on three giant screens. Some fundamentals do apply, though. The bride will wear white and, because of some pesky legalities, a priest will pronounce the couple married in nonvirtual space to make it for real — so to speak. If you have any virtual or real-time tips for Computerworld, call our 24-hour voice-mail tip line at (508) 820-5554 or our toll-free number at (800) 343-6474. News Editor Margy Ann Johnson can be reached by phone at (508) 820-8176, via the Internet at mjohnson@cw.com or through MCI Mail at 000-8017.

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